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Railway Age
AND RAILWAY REVIEW

FIRST HALF OF 1928—No. 6 | FEBRUARY 11, 1928 | SEVENTY-SECOND YEAR

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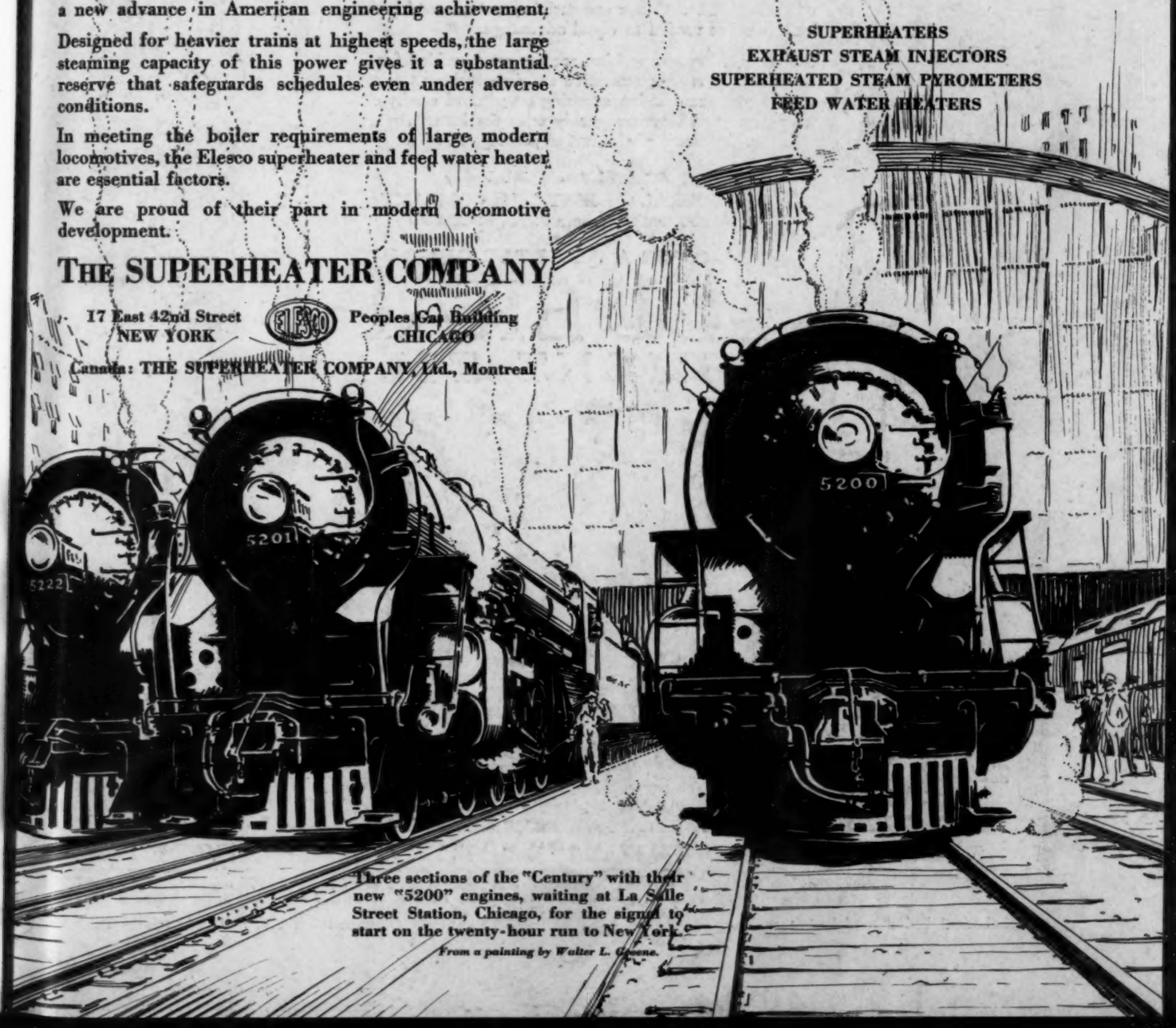

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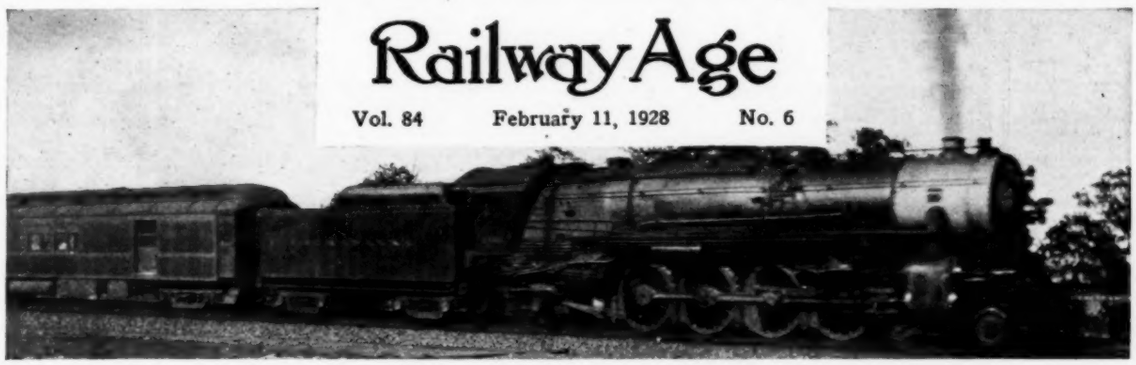
Alphabetical Index to Advertisers Page 64 Classified Directory of Advertisers Page 60

Railway Age

Vol. 84 February 11, 1928 No. 6



On the Lackawanna

Contents

How a Complex Yard Problem Has Been Solved ..... Page 345

A description of facilities at Cedar Hill which enable the New York, New Haven & Hartford to eliminate intermediate terminals.

Central Vermont Acclaims First Through Train Since November Flood 352

A report of the celebration of the running of the first through train in the territory damaged by fall flood.

Rock Island Increases Track Capacity by Either-Direction Signaling 361

Leroy Wyantt, signal engineer Chicago Rock Island & Pacific, tells of reducing delays and relieving congestion approaching the Chicago Terminal.

EDITORIALS:

Improper Loading Responsible for Most Overs and Shorts 341
England Plays Host to a Familiar Canard 341
"It Costs $2.50 to Stop a Train" 341
Draft Gear Maintenance Vital 341
Analysis of an Electric Traction Problem 342
Signalling Information for Operating and Engineering Officers 342
Equipment Won't Run Itself 342
Stricken Vermont Valleys Hail Return of Railroad Service.. 342
What Work Should Be Contracted For? 343
The Way to Reduce Maintenance Costs 343
Working for the Tax Collector 344
Air Brakes Modernized 344

GENERAL ARTICLES:

How a Complex Yard Prob'em Has Been Solved 345
Short Lines Ask Higher Mail Pay 349
Freight Car Loading 351

GENERAL ARTICLES—Continued

Central Vermont Acclaims Its First Through Train Since November Flood 352
Revised Substitute for Rate Making Rule Proposed..... 354
The Manufacture of Some Foreign Rails 355
Preventing Excessive Smoke 357
Commission Objects to Force Accounts Contracts 359
Rock Island Increases Track Capacity by Either-Direction Signalling, by L. Wyant 361
Hearings on Consolidation Bill 363
The Railways and Hand to Mouth Buying 365
Railway Engineers Appear Before Flood Control Committee 367
Class I Roads Earned 4.4 per cent in 1927 369
Southeastern Engine Men Awarded Increase 369
A Fuel Station for Lignite 370

LOOKING BACKWARD 371

ODDS AND ENDS OF RAILROADING 372

NEWS OF THE WEEK 373

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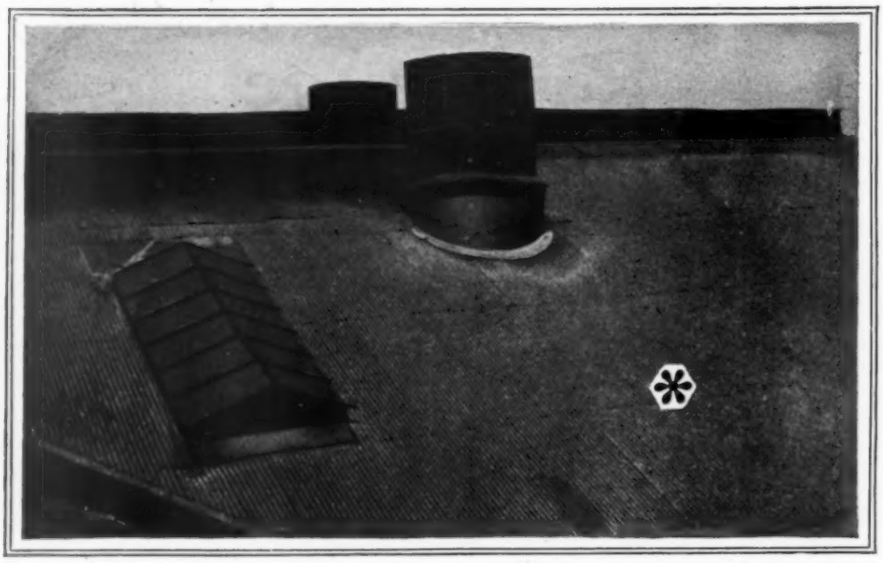

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Railway Age

Vol. 84, No. 6 February 11, 1928 Table of Contents Appears on Page 5 of Advertising Section

Improper Loading Responsible for Most Overs and Shorts

THE commonly accepted theory that most of the over-and-short shipments are due to errors in waybills or to their improper mailing has been disproved by a nine months' study of shipments checking over and short on the New York Central Lines West of Buffalo. Rather, the principal cause was found to be errors in loading. During this period 11,317 overs and shorts were reported, of which 3,981 overs and 3,548 shorts. or a total of 7,529 cases, were investigated. Among these, errors in loading were found to be responsible for 5,062 overs and shorts, or 67.2 per çent, while errors in mailing waybills caused 1,561 mis-shipments or 20 per cent, and errors in the waybills themselves 906 overs and shorts, or 12.1 per cent. Overs and shorts result in claim payments and are charged to the unlocated loss and robbery accounts. This study reveals the source of more than two-thirds of the overs and shorts which, if eliminated, will effect a considerable reduction in the unlocated loss and robbery accounts. If similar studies on other roads reveal similar facts, and if the source can be removed the saving to the railroads as a whole will be appreciable. A large part of the inconvenience to receivers of freight will also be stopped, with a resulting saving to the railroads through the elimination of the clerical work required in tracing and handling overs and shorts.

England Plays Host to a Familiar Canard

IN England the railways are seeking the passage of an act of Parliament extending their charter provisions to permit operation of motor vehicles on the highways. The railways now operate their own collection and delivery services and have some highway motor lines in specific instances. What they now seek is blanket charter authority to operate on the highways. Motor transport interests are opposing the proposed law and, as might be expected, are couching their arguments in terms of concern for the public weal. "Without non-railway motor transport," says one special pleader, "the public would lose the benefit of many cheap fares, and traders of many exceptional rates"—not one word about the economic loss sustained by organized society from uneconomic competition and needless duplication of services. Railways and motor vehicles each have their economic spheres and where one of these forms of transportation enters the proper field of the other there is an irreparable loss. Yet how can the selection of the more economical method be made if the law forces a complete divorce between them? One reads in England pleas to the effect that the railways will operate motor service merely to stifle competition and then drive traffic back to the rails—as if the railways would choose the more expensive method of transportation and endanger their dividends merely from an unreasoning prejudice. The discussion now taking place in England is interesting, since it is of a piece with the kind of selfish political agitation which drove the American railroads out of the marine field some fifteen years ago—to the injury of the marine industry and the national welfare.

"It Costs $2.50 to Stop a Train"

THE actual cost of a train stop, including such items as waste of fuel, loss of time, and damage to equipment, is not generally appreciated even by the employee whose duties are directly concerned with train movements. For this reason the Missouri-Kansas-Texas has provided in each interlocking tower, a sign which conveys the following message in large letters: "It Costs $2.50 to Stop a Train." The amount mentioned is a conservative estimate of the average cost of a train stop; in fact, the stopping of heavy trains on an adverse grade will result not only in wasted fuel, but also in delays, especially if a drawbar is pulled out when attempting to start. The emphasizing of the costs of unsound practices undoubtedly is useful, and may well be employed to influence other employees as well as towermen. Local freight crews and yard crews who are often required to switch on the main line, as well as track foremen, signal maintainers, and bridge crews, would often profit by definite statements of the reasons for the importance of avoiding train stops.

Draft Gear Maintenance Vital

THERE is a growing appreciation that the proper maintenance of draft gears should be considered as important as keeping the air brakes in good operating condition. Both have a vital bearing on train operation and are, in fact, more or less mutually interdependent. With the air brakes in practically 100 per cent condition, enginemen find it difficult and in some cases impossible to handle long modern trains smoothly and successfully because of excessive and non-uniform slack action due to deficient draft gears. Moreover, this condition is responsible in the aggregate for many break-in-twos, switching delays, load transfers and damage to equipment. On one railroad that is now giving particular attention to the inspection of draft gears, nine per cent of the draft gears inspected in a single month were found defective. The master car builder of this road, which may be taken as fairly typical in regard to draft gear conditions, writes, "It is my firm conviction that the car department cannot spend money in any better way than in close supervision of the draft gear situation, as a large number of defective and damaged cars are due to de-

fective draft gears." A concentrated effort on the part of the railroads as a whole to raise the standard of maintenance of existing draft gears will do much to bring about improved operation and reduced expenses in a number of important items.

Analysis of an Electric Traction Problem

AN unusually comprehensive report covering the Virginian electrification was presented before the American Society of Civil Engineers in New York City on February 1. The paper was prepared by George Gibbs, chief engineer, electric traction, Long Island Railroad, and consulting engineer, Pennsylvania Railroad, and was presented by his partner E. R. Hill of the firm of Gibbs & Hill, consulting engineers. The greater part of the material contained in the report has been covered in articles which have appeared in past issues of the *Railway Age* and for that reason no abstract will be published. The report is available to those who desire it, in the January, 1928, proceedings of the society and is to be highly recommended to those who are interested in electrification. It considers the Virginian situation as a complete problem and presents the broad engineering features of the problem; supplying reasons for the findings of the engineers. It also includes a description of the balancing system used in the distribution circuits. In studying the report, consideration should be given to important influencing factors. Traffic movement has not been in any way subordinated to equipment limitations. The effects of this stipulation are exaggerated by the sharply irregular profile of the road and the weight of the trains handled. In spite of these conditions a good power house load factor (from 50 to 65 per cent) has been obtained, but there are sudden large variations in the total power required. At times, the power output of the plant will vary from 0 to 45,000 kilowatts in a few minutes; a condition which might cause any but the largest power supply companies considerably hesitancy in bidding for the load. It was also mentioned in the discussion which followed the presentation of the paper that the equipment used on the Norfolk & Western exerted a certain amount of influence on the choice of Virginian equipment. With proper consideration given to these factors, the report can be used as a valuable guide in determining the advisability of heavy electric traction for similar situations elsewhere.

Signaling Information for Operating and Engineering Officers

SPECIFIC data on the economic advantages of automatic signals and the direction of train movements by signal indication, will be presented before the convention of the Signal Section, A.R.A., at the Stevens Hotel, Chicago, on Monday afternoon, March 5. The Seaboard Air Line installed 254 miles of automatic signals in 1926 and a staff superintendent of this road, who has made a detailed study of the result of this installation will present a paper. The operation of trains by signal indication without written train orders, under the control of a dispatcher at a central point, who also controls the movement of power-operated switch machines for the passing tracks, was accomplished first in 1927 on the Ohio division of the New York Central and the assistant signal engineer of that road will present a paper describing the results in the operation of trains under this new system. The signal engineer of the Central of Georgia will explain the operation of a system for directing train movements by signals which is in service on 25 miles of single track. Savings in operation by the use of spring switches on the Union Pacific will be explained by the signal engineer of that road. The information in these papers, together with the discussion that will follow, will bring out the latest data on these important developments. It should be worth while for every road to be represented at this meeting by one or more operating officers. Engineering officers who plan to attend the convention of the American Railway Engineering Association, starting the next morning, will likewise find it to their advantage to arrive in time to attend this session of the Signal Section.

Equipment Won't Run Itself

THE years since the termination of government control have witnessed an appreciable change in the attitude of railway officers toward roadside facilities, such as water treating plants, coaling stations and cinder pits. There is now a more general acceptance of the principle that true economy lies in efficiency of operation, low maintenance and slow depreciation rather than in low first cost. It would seem, however, that this change in the point of view has not been accompanied by an equally general appreciation of the need of competent attendance for such facilities, because many units of the better and more expensive types of equipment are not being properly cared for, owing to the employment of operators of a low grade of intelligence whose work is inadequately supervised. The installation of a modern, automatic coaling station, for example, is justified on the basis of the quicker service to locomotives, reduced detention of coal cars and decreased cost of handling coal. But it does not follow, if such an installation results in the replacement of four coal shovelers by one attendant, that any one of the four coal shovelers released has sufficient intelligence to be safely entrusted with the responsibility of operating the new plant. "I can readily judge of the condition of the machinery in one of our plants," said an officer of one supply company, "as soon as I see the inside of the hoist house. If the room is clean with everything in order, I can rest assured that the plant as a whole is in good condition." Those railroads which exercise enough supervision over their coal, water and cinder plants to insure that they are in good order at all times are not only going to receive a larger return on their investment in such facilities, but will also avoid the expense and disruption of service which attend breakdowns due to careless or indifferent attendance.

Stricken Vermont Valleys Hail Return of Railroad Service

THERE are at least some thousands of Americans who fully realize their utter dependence on the railroad for a normal economic life. We refer to the inhabitants of the Winooski and White river valleys in Vermont, served by the Central Vermont, who on February 4 saw their first through train since November 2 on which date disastrous floods scourged these valleys. The reception they gave this first train, by reason of its heartiness, would prove even to the most cynical observer that here was sincere and general en-

thusiasm. Railroads do have something of romance about them. It is less frequent that the quality of pathos also enters into their working. Yet this quality was in ample evidence in the greeting tendered by the Vermonters to the first through train on the Central Vermont. On every hand were evidences, covered only partially by snow, of the terrific blow dealt these sturdy people—great gullies where fertile fields had been; houses at all angles far from their foundations, warehouses and mills in various stages of destruction. The citizens have been spending their period of isolation in repairing the damage as much as possible. Much still remains to be done, but with the return of the railroad they can once again turn their hands to production for shipment and once again can they look forward to something like normal existence. Their feelings of gratitude toward their valuable neighbor, the railroad, for its speed in resuming operation and to the parent company for giving the support to make such early resumption possible, is natural. It would be well if such a feeling of neighborly interdependence between the railroads and the sections they serve were general. The ceremonies incident to the reopening of the Central Vermont are described in an article elsewhere in this issue.

What Work Should Be Contracted?

THE recent decision of the Interstate Commerce Commission, condemning the contracting of track maintenance work as carried out by the Pittsburgh & Lake Erie, direct attention to a subject that was a more frequent source of discussion during the war and in the years immediately following than it is today. But the case in point raises questions which are deserving of careful consideration. The advantage of contracting any improvement work awarded through competitive bidding, on a lump sum or unit price basis, with the attending incentive for profit is well established and relatively few roads follow any other plan in carrying out new construction. Exceptions to this rule apply in cases where construction operations are attended by interruption by reason of the operation of trains to an extent that introduces serious factors of uncertainty in any attempt to forecast the cost of the work. But even where this condition prevails, many railroads have contracted work successfully on a fixed price basis.

In considering the contracting of track work, it is necessary to distinguish between major operations such as track laying, ballasting or rail renewal, which may be awarded on a fixed price basis, and general upkeep operations in which no opportunity is afforded for measuring the performance to a degree of accuracy which would permit of compensation on any other than a man-hour basis. The advantages of contracting the major operations, particularly with respect to new construction, would seem to have been definitely established, as indicated by the number of instances where this practice is being followed in connection with the building of new lines, second tracks or yards. It has also been found of advantage, in some cases at least, in major renewal operations. Here again the incentive for profit has been productive of appreciable savings.

In view of these conclusions, the question arises as to the condition under which contracting is warranted when the compensation is necessarily on a force account basis and the incentive for profit cannot be introduced with equal effectiveness. There are those who contend that contracting under such terms is an admission of impotence on the part of the railway organization, and during the period of government control and under the domination of the Labor Board many maintenance of way officers frankly admitted this charge, pointing to the many restrictions imposed on them that made it difficult to carry out almost any work with dispatch and efficiency. Added to these obstacles was the burden of an exhausted labor market with kaleidoscopic changes in wage rates with which the railroad seemed unable to cope. Under such circumstances the conduct of work by a contractor who would be free to fix wages to meet the exigencies of time and place possessed marked advantages; in fact, there were times when it would have been impossible to get work done in any other way.

In those trying times the chief concern was to get the work done; cost was of minor consideration. Consequently the simplest form of agreement with any individual who was known to possess the initiative and enterprise to get things done was entirely appropriate. But times are changed. Except in certain areas, the roads have not had to contend with serious labor shortages. Moreover the physical condition of the properties has been improved to such an extent that, as a general rule, it is primarily in cases of emergency such as storms or floods that the railroads have been compelled to do work under circumstances that do not allow ample time to build up an effective organization. Under these more favorable conditions, the managements of many railroads have had an opportunity to concentrate attention on the ascertainment of the costs of doing work, and with progress in this direction it should be possible to learn definitely when, under what circumstances and with what basis of payment contracting of maintenance work is profitable.

The Way to Reduce Maintenance Costs

IT is a common saying that one must spend money to make money. This is particularly true of the railways for, in general, it is those roads that have made liberal expenditures for modern locomotives, for grade reduction, for additional tracks, etc., that are now rendering the most efficient service and handling their traffic most economically. This principle extends beyond adequacy of facilities, however. In concluding a paper he presented before the American Wood-Preservers' Association at Montreal a couple weeks ago on the economies that the Lackawanna has effected by the treatment of its ties, George J. Ray, chief engineer of that road, presented a comparison of the percentage of operating revenues expended for maintenance of way and structures by a number of leading roads throughout the country. While this measure of comparison is open to many objections, it is doubtful if any more accurate basis of comparison is readily available. Conceding its shortcomings, it can at least be said that it is indicative, if not entirely accurate.

A study of these figures sustains Mr. Ray's contention, not only as to the Lackawanna but as to other roads cited as well, that money expended judiciously

for the strengthening of the roadway structure will yield large returns on the investment in the form of reduced expenses and increase the net revenues just as directly as when spent for grade reduction, etc. This is a point not yet sufficiently realized by railway managements generally or even by engineering officers. The greatest economy is not attained merely by providing a track structure that will carry the traffic safely but rather by developing such standards of construction as will lead to the most economical maintenance, interest on the investment and all other costs considered. There is a wide spread between these two bases. In other words, the sums that can be spent with economy greatly exceed those required for the safe handling of traffic.

These expenditures take many forms. Investments in embankments and cuts of ample width, adequate drainage, sufficient ballast, treated in place of untreated ties and other timber, and heavy rail all contribute to the conservation of labor and materials, if used wisely. It is through the judicious use of materials such as these, combined with the corresponding investment in the rapidly growing list of equipment to reduce labor, that the cost of roadway maintenance is being reduced or at least held stationary on many roads in the face of an increasing traffic.

Those roads whose maintenance ratios are high in comparison with their neighbors owe it to themselves not to brush comparisons of this kind aside with the conclusion that "our conditions are different", but to study their neighbors' methods to determine whether something may not be learned from them. The liberal expenditures which the railways as a whole have made for roadway improvements during the last few years are indicative of the growing appreciation of the economy of such practices. Comparisons such as that presented by Mr. Ray show, however, that this development is still in its infancy for the country as a whole.

Working for the Tax Collector

WHILE complete financial statistics have not yet been compiled for the year 1927, information now available indicates that the taxes paid by the Class I railways last year will show a reduction below the total for the preceding year, this being the first break for these roads in the upward trend of tax assessments which has continued since 1915.

The taxes of the Class I lines (excluding terminal companies) will apparently show in 1927 a reduction of about nine million dollars, or two per cent below the 1926 total. Lest there should be aroused false hopes of a change in local, state and national taxation policies, it should be added that this tax reduction was accompanied by a drop of some two hundred million dollars, or more than three per cent, in railway operating revenues. In consequence of this disproportionate falling off in earnings, taxes in 1927 consumed 6.2 cents out of every dollar of operating revenues received by the railways, this being the highest percentage ever recorded. In 1911 tax payments consumed 3.6 cents out of each dollar of railway operating revenues, while the corresponding 1916 tax proportion was 4.4 cents.

It is estimated that the railway operating revenues of the Class I lines in 1927 were approximately $6,172,000,000, while railway operating expenses were about $4,595,000,000. This left a net operating revenue from 238,000 miles of railway line amounting to $1,577,000,000. Taxes amounted to $380,000,000, or about 24 per cent of this total. Applying this percentage to the mileage operated it is seen that taxes last year were equivalent to the net revenues earned by 57,000 average miles of railway line.

In other words, these 57,000 miles might as well have been working directly for the tax collector as far as railway earnings from them were concerned. The corresponding totals were 25,000 miles of line in 1911, and 29,000 miles of line in 1916.

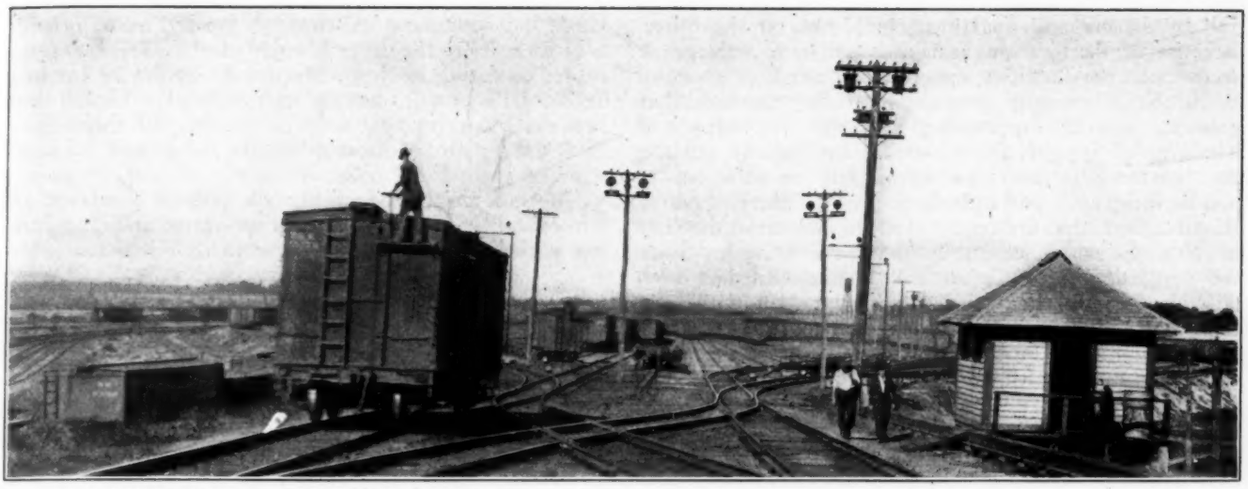
Air Brakes Modernized

THE absolute dependence of modern railway operation upon effective air brakes is generally recognized, but, like many other essentials, air brakes are taken more or less for granted and it is assumed that they will somehow or other be suitably maintained. No more erroneous idea was ever allowed to propagate. If the railroad forces responsible for the maintenance of air brake equipment were to relax their vigilance or lower their standards for a single day or hour, the results would be disastrous.

This year is the sixtieth anniversary of the first practical application of air brakes, and most of the major developments have apparently already taken place; but air brake growth and improvement are by no means dead. This was demonstrated in a striking manner at a meeting of the Western Railway Club at Chicago last week when improvements in air brakes and the progressive modernization of air brake maintenance practice were discussed by representatives of the Westinghouse and the New York Air Brake companies. Improvements and refinements in the design of air compressors, air cleaners, oil cups, piston rings, governors, feed valves, reservoirs, retaining valves, angle cocks, brake cylinders, packing rings, and cylinder caps were described which opened the eyes of the large number of members in attendance at the meeting to what is being accomplished, and convinced them that the air brake manufacturers have kept in touch with modern operating requirements and are effecting improvements with a minimum interference with existing standards and with important savings due to the increased life of brake equipment parts and reduced maintenance cost.

The railroads also have an important responsibility in securing more satisfactory brake performance. It is apparent that while air brake maintenance standards have improved within the past five years and are now better than ever before, particularly as relates to the pneumatic part of the equipment, too little attention is being given on some roads to the foundation brake rigging which, under some conditions, causes irregularities of brake action unjustly charged to the pneumatic brake equipment. A campaign for the better observance of rules already in effect regarding the foundation brake rigging will unquestionably bring desirable results.

Discussion at the meeting indicated among other things that more careful handling of air brake valves between the time they leave the test rack and are applied in service is generally necessary; that the roads will be well advised to guard against alterations of existing standards locally before the necessity for these changes has been established; and that the more extensive and also in some cases the more intelligent use of the valuable soap suds test for leakage will be beneficial.



The Eastbound Hump, Looking Toward the Classification Yard

How a Complex Yard Problem Has Been Solved

Facilities at Cedar Hill enable New York, New Haven & Hartford to eliminate intermediate terminals

As a result of the building of the Cedar Hill terminal, the New York, New Haven & Hartford has been able to reduce or eliminate operations in five intermediate yards, at Putnam, Conn., and Midway, and at Middleboro, Mass., Westfield, Mass., and Taunton, in addition to reducing expenses materially in other yards which are still being operated.

There are so many others factors which have affected operations on the New Haven, in addition to efficient operation at Cedar Hill terminal, that it is impossible to allocate accurately the magnitude of the savings attributable directly to that yard. However, it is of interest to note that, including Cedar Hill, the gateway terminals and the smaller yards affected, an increase in traffic was handled in 1926, as compared with 1920, with a decrease of 5 per cent in yard engine hours.

This result was accomplished, first, by the construction of a yard that could handle satisfactorily the traffic coming in from many directions, and, second, by efficient operation of the yard after it was constructed. This efficiency is illustrated by the car-handling records that have been made in this terminal. In 1925, 1,067,581 cars were classified, an average of 88,965 per month, while, in 1926, 1,167,932 cars were humped, or 97,328 per month. Estimating December 1927 as normal, 1,181,916 cars will have been humped in 1927, or 98,493 per month. The highest month since the yard was built was October, 1926, when 110,600 cars were classified, or 3,567 cars per day, while the highest 24-hour total was reached over one hump on May 22, 1926, when 2,511 cars were classified. Excluding the three 20-min. lunch periods, this is at the rate of 109.2 cars per hour, or 1.8 cars over the hump every minute throughout the three shifts. The highest 24-hr. record for both humps is 4,325 cars, while 1,874 cars have been handled over both in one 8-hr. shift, at the rate of 230.9 cars per hour.

Radiating and converging lines in several directions compelled the construction of a terminal of adequate capacity at the hub, which was at Cedar Hill in this instance. There the demand for numerous classifications is an important feature. Since 95 per cent of the traffic on the New Haven is distributed to or originates at some 550 different points on its line, the necessity for classification is almost endless.

Cedar Hill was designed to meet the complex requirements. The New Haven has other important terminals, and operates through trains between them to the extent permitted by the volume of traffic. Cedar Hill differs from these other yards in that here trains indiscriminately made up and coming in from all directions are classified and made up into solid trains for each point for which there is a sufficient volume of traffic. There are 18 destinations to which solid trains are operated daily east and north from Cedar Hill, as follows:

New Britain, Conn.
Hartford, Conn.
Springfield, Mass. (Boston & Albany)
Springfield, Mass. (Boston & Maine)
Springfield, Mass. (Local)
Willimantic, Conn.
Worcester, Mass.
Worcester, Mass. (Boston & Maine)
Portland, Maine.
Providence, R. I.
Auburn, R. I.
Taunton, Mass.
New Bedford, Mass.
Fall River, Mass.
South Braintree, Mass.
Brockton, Mass.
Readville, Mass.
Boston, Mass.

Relieving Congestion in New York

The efficient operation of Cedar Hill terminal has resulted in relieving to a large extent, the congestion at the New York gateway, through which some 40 per cent of the system's total interchange is made. As has been stated, the Harlem River terminal operations were appreciably reduced. Relief was also afforded at Oak Point, an electrically operated, flat interchange yard in the New York terminal. Cars are interchanged there with the Lehigh Valley, the Central of New Jersey and the various Brooklyn terminals by car float and with the Long Island and the Pennsylvania by rail over the New York Connecting Railroad. Approximately 1,150 cars are forwarded eastward from the New York gateway daily.

Oak Point yard is hemmed in by water on one side

and by streets and apartment buildings on the other. Because of its location, it is impossible to enlarge or reconstruct the facilities, except at tremendous expense. With the continuing growth of traffic through that gateway and the increasing necessity for expedited handling of freight, the situation was rapidly nearing the point where facilities would not be sufficient to handle the traffic, particularly in view of the diversified classifications that are required in the industrial districts of New England served by the New Haven. Since the construction of Cedar Hill terminal, it has been possible to bulk the trains into Cedar Hill with only general classifications. This has reduced the operating burden at Oak Point so that the facilities there are ordinarily ample to handle all the traffic moving. The classification of cars for New Haven and beyond, comprising a larger proportion of the business handled, is no longer necessary at the New York gateway and cars are now cleared rapidly through Oak Point yard, the work there being largely confined to handling cars to and from the car floats and classifying cars not routed via Cedar Hill. Only two classifications are now made at Oak Point for Cedar Hill and east, as compared with 18 classifications previously necessary. In fact, except for the operation of the Cedar Hill Terminal, the New York gateway would have been so overburdened long before now, as to compel drastic revision of routes into New England, many of which are of long standing.

The situation at the other western gateway of the New Haven, at Maybrook, N. Y., through which some 25 per cent of the system's interchange is made, is entirely different. Maybrook yard is equipped with both eastbound and westbound humps. It has a large excess capacity now and there is no question of space restriction, since the yard is capable of enlargement to practically any extent at relatively low cost. Here, however, because of the wide diffusion of traffic, if cars were held in order to build up solid trains for the numerous destinations, either the service or the tonnage or both would suffer. Consequently, with minor exceptions, all cars moving through Maybrook destined to Cedar Hill and beyond are forwarded to Cedar Hill unclassified. The combined volume of freight from the New York and Maybrook gateways, centering at Cedar Hill permits the daily dispatch of the large number of solid trains previously mentioned.

Facilities at Cedar Hill

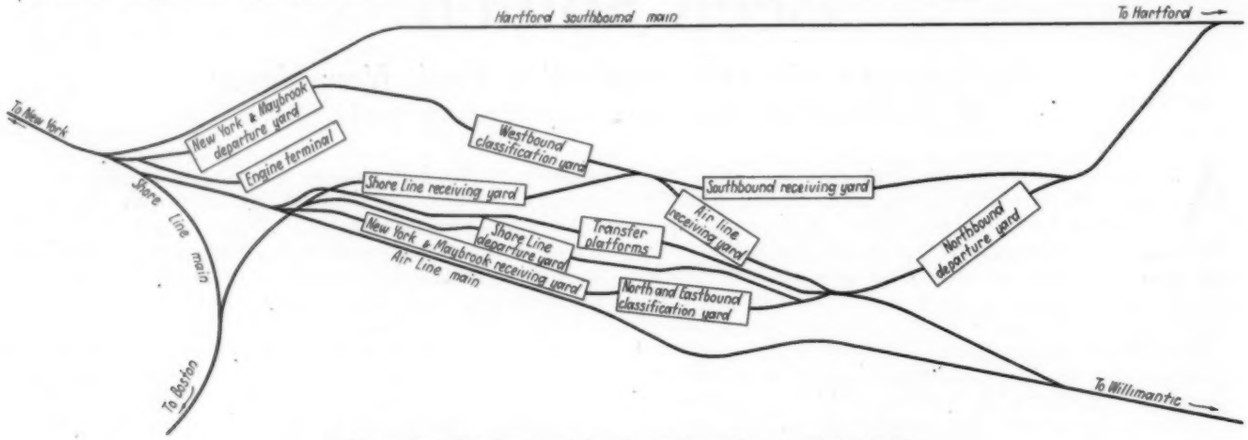
The Cedar Hill group of yards is part of the terminal district at New Haven, Conn., which consists of 25 yards and switching districts, so located as to provide a classification facility for each of the six converging routes centering in New Haven. There are 14 yards at Cedar Hill proper, having approximately 15,000 cars capacity, covering 880 acres, extending 7.1 miles from New Haven to the most northerly point, and 1.5 miles wide at the widest point.

The classification facilities comprise 9 yards in all, 4 receiving yards, 2 classification yards and 3 departure yards. The details of these yards follow:

Yard	No. of tracks	Capacity cars
Shore Line receiving	6	600
New York and Maybrook receiving	9	935
Southbound receiving	5	500
Air Line receiving	2	100
Westbound classification	38	1,600
North and Eastbound classification	44	1,500
Shore Line departure	14	1,410
New York and Maybrook departure	25	1,300
Northbound departure	5	450
Total	148	8,495

The Eastbound Movement

Traffic enters and departs from Cedar Hill yard over a number of different routes. In order to secure straight-line operation as far as possible and avoid back-hauls, much ingenuity was necessary in planning the movement of cars through the terminal. The plan finally adopted was carefully worked out and provides for the maximum efficiency. Business from the West arriving at Cedar Hill comes principally from two sources. Cars routed via New York come into New Haven over the New York division which is electrified from New York to Cedar Hill. Some of the western connections make classifications direct on Cedar Hill, and in return, the New Haven makes certain classifications from Cedar Hill on westbound business direct on the terminals of the western connections.



Operating Diagram of the Yard Lay-Out at Cedar Hill

Several important western connections are also made at Maybrook, N. Y., including the New York Central, the Erie, the Lehigh & New England, the Lehigh & Hudson River, and the New York, Ontario & Western and, via these routes, the Central of New Jersey, Delaware, Lackawanna & Western and Lehigh Valley. Practically no classification is performed at this point on business destined beyond Cedar Hill and yard expenses at Maybrook have been decreased materially since the Cedar Hill terminal was opened. Cars routed via Maybrook move over what was formerly the Central New England, now the N.Y., N.H. & H., into Danbury, N.Y., N.H. & H., proper into Devon, Conn., and from that point to Cedar Hill over the same tracks used for traffic from New York.

This traffic from the West moves north and east out

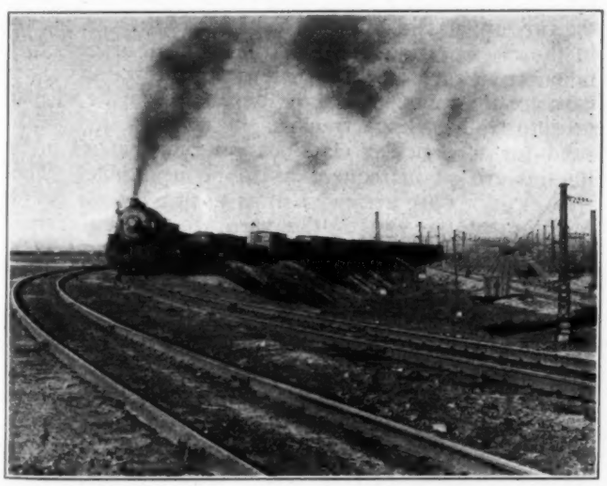
of Cedar Hill in four ways after classification: via the Shore Line, which runs through New London, Conn., and Providence, R. I., to Boston; via the Hartford division, which runs northward through Hartford, Conn., to Springfield, Mass.; via the Air Line, the short line to Boston via Middletown, Conn., Willimantic and Putnam, and via the Canal, through Plainville, Westfield and Northampton. Because of heavy grades and traffic conditions, however, the business handled by the latter two routes is principally local.

As will be seen from the accompanying diagram, cars from the West are moved directly into the New York and Maybrook receiving yard. Most of the cars arriving from New York and Maybrook move eastward via the Shore Line. They are therefore taken over the hump and classified into the north and eastbound classification yard, from which point, they are brought back to the Shore Line departure yard and are made up into trains for movement East over the Shore Line.

Cars from New York and Maybrook intended for movement North on the Hartford division are taken from the receiving yard, classified in the north and eastbound yard, moved into the northbound departure yard, made up into trains and taken out over a lead directly to the Hartford main line at North Haven, a straight-line operation throughout. The relatively few cars from New York and Maybrook destined for movement over the Air Line are handled into the northbound departure yard in the same manner and, after being made up into trains, are taken to the Air Line by means of a lead which skirts the material storage yard.

Handling Westbound Traffic

Westbound business coming from the Shore Line is delivered to the line over an inbound freight track, which parallels the outbound freight track, and then

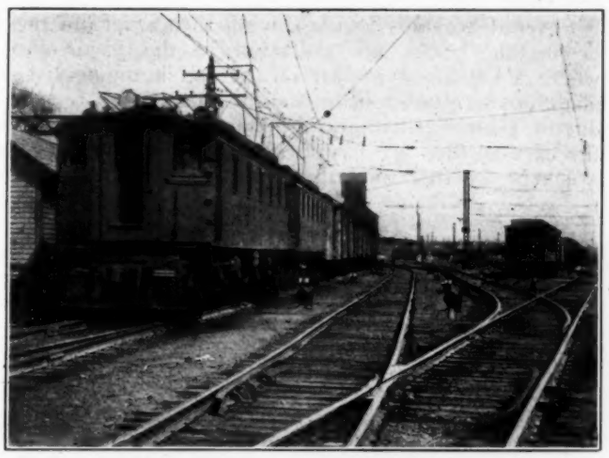


An Eastbound Train Leaving the Shore Line Departure Yard

leads to the Shore Line receiving yard. From this yard cars are taken over the westbound hump and classified in the westbound classification yard. They are then taken into the New York and Maybrook departure yard and from there in trains out to the main line.

The Hartford division runs adjacent to the yard on the North, and southbound business leaves the main line at North Haven, going into Cedar Hill over a lead into the southbound receiving yard. From there it is classified over the westbound hump into the westbound classification yard. From this yard it follows the same route to the main line as the westbound Shore Line cars. A wye track on the north side of the material yard permits engines, after they are cut off from trains arriving from the Hartford division, to turn and go into the northbound departure yard for return trains, with not over an hour's interval necessary between the time they bring a train in and their departure with an outbound train.

The Air Line is single track and business coming down this line is handled over a lead around the mater-



An Electric Train Leaving the New York and Maybrook Departure Yard

ial storage yard into a section of the southbound receiving yard set apart for that purpose. It is then classified over the westbound hump and moves to the main line over the route followed by the Hartford division and Shore Line cars.

Methods of Operation

Advance consists of all trains enroute are telegraphed to Cedar Hill so that the assistant superintendent in charge may assign switching power and riders in accordance with the amount of business to be handled in each 8-hr. shift. As the trains arrive, the hump yardmaster notifies the yardmaster at the entrance to the receiving yard of the tracks to be used. This information is broadcast on a loud speaker installation, and informs the hump conductor, the yardmaster's office, the tower and the departure yard simultaneously of the train movements.

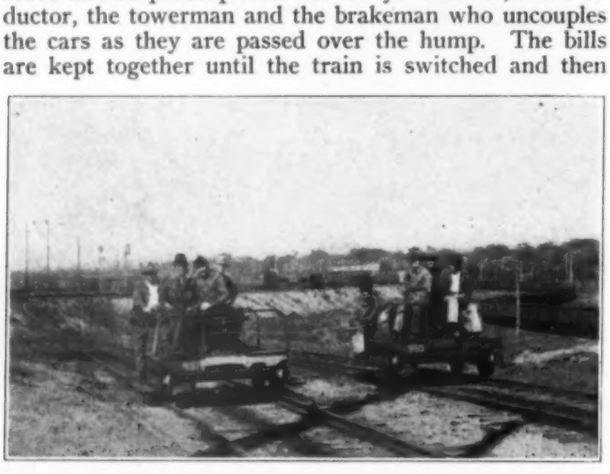
After the train arrives in the receiving yard, the locomotive is detached and returned to the south end of the yard for the caboose and then moves to the westward departure yard for a return train or to tie up. Caboose tracks are situated at various strategic points about the yard, adjacent to the departure tracks, so that the removal of cabooses from incoming trains and placing them on outgoing trains is accomplished with a minimum of interference to other yard movements. In the interest of safety, the tracks assigned to cabooses are used for no other purpose and there is no possibility of a freight car being shunted onto these tracks in error.

Bad Order Cars

The arriving trains are checked promptly by the yard clerk and inspected by the car inspectors. Cars with defects which require them to be moved to the repair tracks are so carded and reported to the yardmaster before humping. Adjacent to each classification yard is a light repair yard, reached by a ladder track from

the hump in each instance, so that the bad order cars may be classified in accordance with the wishes of the car department to facilitate their repair. The light repair yard adjacent to the westbound hump has a capacity of 212 cars, while that adjacent to the north and eastbound classification yard has a capacity of 190 cars. In addition to the light repair facilities, there is a well equipped car shop for handling heavy repairs, consisting of a mill with modern machinery, a blacksmith shop, a triple valve repair room and a triple valve test rack.

Revenue waybills accompanying the cars from their originating points are delivered to the yard office, where a combined arrival record and humping list is made out in quadruplicate for the yardmaster, the conductor, the towerman and the brakeman who uncouples the cars as they are passed over the hump. The bills are kept together until the train is switched and then



Car Riders Returning to the Hump on Speeder Cars

are separated into compartments with numbers corresponding to the classification yard tracks. After the train is switched, the yardmaster records and changes from the original track numbers and delivers the list to the train clerk for the distribution of the bills to the proper racks. The bill rack then shows the bills in the same order as the cars on the respective tracks. Bills are then forwarded to the departure yard for the necessary train records covering the outbound movement. Thus, when the outgoing train is made up, the complete billing for all cars in the train is readily available and there is no delay waiting for the billing to catch up with the cars, or searching for lost bills.

Humping Operations

After the train is released by the inspectors, the humping locomotives push it over the hump. The power used in this service is of the three-cylinder type, with a total weight on drivers of 247,000 lb., and 60,300 lb. tractive effort. The humping conductor governs the movement of the train by fixed signals at the hump, which are repeated by light signals in the receiving yard. The pin puller, or hump brakeman, cuts the cars in accordance with the switching list. Two humping tracks are provided over each hump, one each for summer and winter operations, the winter humping track having a sharper grade to give the cars the necessary additional impetus required during the severe weather prevalent in this section of New England during the winter months.

As the cars leave the hump they are switched to the tracks shown on the switch list, by the towerman who operates all switches by a push button machine. The switches are electrically controlled and are operated by compressed air. Track circuits prevent the operation of a switch between the trucks of a car. Indicators on the machine in the tower show the location of the cars and the position of the switches.

The car riders board the cars in front of the yard brakemen's building as the train is being pushed to the hump. The humping conductor records the names of the riders on each cut, for the purpose of checking their work and determining the responsibility for damage, should any occur. The pin puller notifies the riders of the number of cars in the cut, their contents and the track to which they are to be switched. At the end of the ride, the riders couple their cars to cars already in the classification tracks and open the coupler on the opposite end of that car, so that couplings with the following cars will be made automatically. They return from the classification yard to their building on gasoline speeder cars, which are operated through each classification yard, on separate tracks provided for that purpose only.

A check of their performances showed that, during one eight-hour shift, including 20 min. for lunch, 16 riders classified 1,130 cars, in 802 cuts, over the westbound hump. This is at the rate of 70.6 cars per rider per shift, or 8.8 cars per rider per hour, an average of 9 min. 11 sec. for each ride during the entire shift. On the eastbound hump, in one 8-hr. shift, 15 riders classified 1,029 cars, in 785 cuts. This is at the rate of 68.6 cars per rider per shift, or 8.4 cars per rider per hour. The average rides were 51.6 per rider per shift or 6.45 per hour, an average of 8 min. and 54 sec. for each ride. The number of cars per cut over both humps averages about 1.33 cars.

As will be seen, all movements through the yard are planned so as to avoid interference wherever possible. The routing of engines after they have been cut off inbound trains is an example of this and the same idea is carried out in arranging for the necessary movements involved in getting outbound trains made up. After the cars are classified, train clerks notify the yardmasters in the classification yards of the number of cars to be taken from each track in making up the trains. These cars are then moved into the departure yard and made up into trains. Each track in the classification yard is used for a particular classification and changes in this line-up are so infrequent as to be negligible. These classifications are arranged so as to provide for prompt handling at the end of the yard without interference with other switching moves, and a number of crossovers and leads are provided to keep the several switching locomotives busy and out of each other's way.

No small part of the efficiency of the yard is due to the excellent condition in which the yard power is maintained and the speed with which road engines can be taken care of and prepared for outbound movement. A modern engine terminal is maintained at Cedar Hill. It is of concrete, with wooden additions, with accommodations for 72 locomotives under cover in individual stalls. Each stall is equipped with the necessary pit with heating apparatus and connected with a blower system. The enginehouse is served by two turntables, 95 ft. and 100 ft.

Two inspection pits are provided on the incoming tracks for necessary inspection and running repairs. After inspection, the engines pass over ash pits to the enginehouse for turning and any repairs that may not have been made in the inspection pits. Work reports are conveyed from the inspection pits to the office by a pneumatic tube system and a directory is maintained in the office showing the location of every locomotive in the yard. Between 100 and 110 engines are handled each 24 hours.

Short Lines Ask Higher Mail Pay

Separate rates based on situation of individual roads, urged in argument before I. C. C.

WASHINGTON, D. C.

ESTABLISHMENT of separate rates for mail transportation for 173 short line railroads, based on the conditions of each individual road, was urged by Moultrie Hitt, attorney for the short lines involved, in the argument before the Interstate Commerce Commission on January 20 in the railway mail pay case. The large railroads, represented by the Railway Mail Pay Committee, are asking the commission for a 40 per cent increase in the mail pay rates, while the Post Office Department is seeking a reduction. The short lines presented a separate case pointing out that rates fixed on the basis of statistics representing conditions on the railroads as a whole work out very unfairly when applied to the handling of mail on a "retail" basis by the short lines. The law authorizes the department to enter into special contracts with roads on which conditions warrant it but the department has declined to do so. If the commission should not see fit to allow individual rates, Mr. Hitt asked that it at least make a relatively larger increase for the smaller units of service. An abstract of Mr. Hitt's argument follows:

The subject before you is nothing more or less than a question of fixing just and reasonable rates for a transportation service, except that in fixing the rate on mail you are also acting in the capacity of a jury to determine the measure of damages in a condemnation case under the power of eminent domain, because the use of the carrier's property is being taken under a compulsory statute whereby a contract to pay is implied, the fifth amendment to the federal Constitution prohibiting the taking of private property for a public purpose without just and reasonable compensation.

The original basis of payment for transportation of the mails was by weight, and the rates were fixed arbitrarily by Congress each year . . . until it got to a point where it was costing the carriers as a whole about two dollars for every dollar of pay they received. Relatively the situation as to short lines was a great deal worse than that. For example, they were required to deliver and call for the mail at the town post offices, which sometimes cost them more at a single station than the entire payment they received for handling all the mails over their entire line. The Post Office Department had the roads in a corner, because they couldn't afford to discommode the people even if they got no pay at all for handling the mails.

The Space Basis

The so-called space basis plan was adopted for the further reduction of mail pay, at the same time that Congress placed the subject under your jurisdiction. . . . When you convert a ton into feet the average mind can readily accept such an equivalent, but when you take a further step and double up the tons per foot you no longer have the same equivalent. The Post Office Department has reaped a great advantage from thus confusing the terms, and I hope you gentlemen will be on your guard against it. Where one foot of space is made to do the work of two feet of space, the value of the service has been substantially enhanced. It is manifestly unfair to require the carrier to transport two tons for the price of one, with no participation in any saving.

The space basis as applied to short lines has less justification than on larger roads. In some instances the pay of the little roads was actually reduced, although you thought you were making an increase by your decision of December 23, 1919. The service of the majority of the short lines is a three-foot or seven-foot so-called "closed pouch service," which means that the railroad employee puts off and takes on sacks and packages at every way station, and in order to keep track of the various sacks and parcels has to spread them all over the car in station order, whereas the mail pay is based on the limited number of feet to which the mail could be confined if it were stacked between stanchions to a height of six feet.

Every so often the Post Office Department, at some big city station, builds racks the width of a standard car, three feet long and six feet high, to develop a count of sacks for a 3-ft. unit. The present count by that intensive loading for a 3-ft. unit is 56 sacks. Then using 56 sacks as the equivalent of three feet of space, they determine the space to be paid for on a short line by a count of sacks carried, although, as a matter of fact, several times that much floor space may have to be used. The term "space basis" as applied to short lines is obviously ridiculous, and the commission should return to the weight basis, or adopt a per sack and per package basis for that class of service, and that is one of the points on which we ask your serious consideration. *** Congress entirely abandoned the old fiction that a carrier was at liberty to refuse to contract for hauling the mails, and put an iron clad provision in the law that every carrier *must* handle the mail when called upon to do so by the Post Office Department, and provided a punishment of $1,000 per day for every day for which a carrier might refuse to perform. Thus the railroad is not acting as a common carrier and this commission is not lawfully free to prescribe rates which will be anything short of full compensation. Just compensation in eminent domain proceedings, as this is, not only includes consideration of the cost of service, as far as that can be ascertained, but it also includes the element of damage, as is here present, because the parcel post rates are so low that the Post Office Department on some commodities, takes from these little carriers their l.c.l. freight and express traffic.

The Post Office Argument

That department's brief pleads that the mail is such a valuable and important factor in the social and economic life of all the nation, including the railroads themselves, that the very lowest rates that can be plausibly be devised should be applied to mail traffic, simply because the railroads are a public utility. But value of service is a consideration which usually justifies a higher rather than a lower level of rates. *** If this government were bankrupt and the situation called for individual sacrifice, that would be an undoubted consideration in voluntary servitude, but such an argument certainly has no application where a service is

arbitrarily requisitioned in times of peace by a strong government, amply able to pay just compensation.

That common carriers sometimes make *voluntarily* very low rates on certain commodities, to stimulate development, is no justification for forcing on those carriers, when their private services are *compelled* under government requisition, very low rates in place of the full and reasonable compensation to which they are entitled under the constitution. As sworn officers of the government you are under a duty to vindicate those constitutional rights rather than to yield them to anybody's specious pleas.

The act of 1916 commands this commission, in fixing rates, to consider the relation existing between the railroads and the government. But what does it mean? The act does not even intimate that in giving consideration to the relation existing between the railroads or public service corporations and the government, Congress intended that the commission should try to "gyp" the carriers. If the clause has any significance at all, it can only be as an authorization to fix rates materially higher than would be sufficient to merely provide just compensation.

It is a well-known practice of governments to pay mail subsidies to steamship lines. This government has done so from time to time in the past. I presume there are instances in which railroads have been similarly subsidized by governments for handling the mails. This paragraph does now exist in our law with reference to railway mail pay, however, and my point is that it may very well be used by this commission, on appropriate occasions, as one of the means by which it may discharge the constructive duty laid upon it by Congress to foster and preserve the national system of transportation. The clause in the law so strongly relied upon by the department not only does not support its case, but is authority in our favor.

Special Contracts

Section 5 of the Mail Pay Act of 1916 authorized the Postmaster General to make special contracts with railroad companies for the transportation of the mails where in his judgment the conditions warrant the application of higher rates than those justified in the law. The legislative history of the act will so show that Congress had in mind the extreme hardship and injustice which has heretofore been visited on many little railroads, and that Congress was led by the department to believe that such a provision would enable them to do justice to our little railroads. But the department has taken the position that while it, admittedly, did have the authority to make special contracts, it would not do so, because nearly every little short line could come in and show that its situation was a special one. It did not want to establish any precedents that would encourage this, so preferred not to exercise any of the judgment authorized.

I think it is clearly evident that it was within the contemplation of Congress that you may fix rates higher than might be sufficient to be merely just and reasonable. In other words, you have a margin of discretion above the line of just and reasonable compensation, but not below that line, since the Constitution forbids. Since the department refuses to do justice voluntarily, you should fix rates which will compel it.

Individual Rates

There is a marked distinction between the case of the Committee on Railway Mail Pay (for Class I roads) and our case. The large roads ask you to fix average rates for all the larger roads. They freely concede, nevertheless, that the situation as to short lines is different, because, as a rule, each short line stands by itself. Our lines do not connect with each other, as a general thing; the element of competition between them for mail traffic is practically non-existent. No two of our lines are much alike. To classify them so as to throw them together in groups with substantially similar characteristics is impossible. A grouping by mileage is highly arbitrary because the traffic density per mile shows a very wide range. A grouping based on earnings would show a wide range in mileage. There is a wide range in the frequency of service. *** Since the department will not use the authority given it to fix special rates for all these special cases, we must necessarily appeal to you to fix rates which will not be less than just and reasonable to each carrier.

We strongly oppose any average scheme of rates which would produce only an *average* just and reasonable compensation. The department itself seems to have latterly adopted the policy of seeking a reduction for individual lines to which an average increase has been applied. They will probably continue that policy hereafter, and it is highly probable that if an average rate is fixed for roads of our class, those who are below the line will promptly institute a new individual proceedings for the increase to which they feel individually entitled. That being the prospect, anyhow, we urge you to deal now with these short line rates on an individual basis in each instance, according to its own particular merits.

We made a special study on 173 roads to show that the present supposedly uniform rates do already, as a matter of fact, produce a wide range of pay per mile of service. Time will not permit an analysis of all that was developed; but we not only made the same space tests and financial studies as did the larger roads, but in addition to that, we made a series of careful studies, which we attempted to make complete for each individual road (but were not wholly successful in every instance) so as to give this commission all the facts we could command.

Those studies showed, among other things, the general condition of each short line, the revenue which would be derived from the space corresponding to the mail space authorizations on each road, if that space were employed for the transportation of passengers and express, and from freight at current rates. Also studies were made showing the "out of pocket" (wages) which could be directly allocated to mail service, the loss of freight to parcel post, and a number of other things.

These various studies were brought together in three groups designated for convenience as Plans 1, 2 and 3, as fully explained in our brief. These three plans are shown with columns showing the percentage of increase needed under either plan, and then a column showing the average of all three groups of studies for each road.

Since the department has always laid stress upon comparison between the revenue derived by the carriers from express as compared with mail, we made that comparison as one of our studies.

We developed that comparison upon an actual count of all packages of express and of mail for a test month, mailsacks being counted as but one package. We compared the direct revenue from express with the mail pay for each road, and found that the revenue per piece averaged 7.83 cents from mail and 15.76 cents per piece from express. There were a few specific instances in which the revenue per piece from mail averaged a

little more than from express, and we then made a further study of the additional revenue derived from express, consisting principally of the amounts paid by the express company to railroad employees. When that element was taken into consideration, in all but five instances, the revenue from express substantially exceeded that from the mail. It should be remembered also that the low parcel post rates are continually taking freight from the express service on which we average 15.76 cents, whereas the mail pay rates average us only 7.83 cents per piece.

We do not place our whole reliance upon that express study, but it is highly relevant and is a material factor. In our exhibit we have added a column from the department's exhibit, showing the return from mail, and one showing the percentage of reduction if the minimum were abolished with no change in present rates. This statement portrays so graphically the ridiculous results from a strictly logical application of the only statistics which the department thinks are relevant, that I will refer to just two or three of the most extreme examples.

Take the Campbell's Creek Railroad. For a 14-mile haul of a 3-ft. unit, the carrier gets 78 cents a trip. The department says this is a return of 102 per cent and is consequently excessive.

Take the East Jordan & Southern, which gets $1.56 for a 3-ft. unit hauled 19 miles. The department says this is excessive because the statistical conclusion is that this $1.56 is a return of 148 per cent. According to the logic of the department, the Sardis & Delta, for handling a 3-ft. unit, putting on and taking off mail at every stop, makes a return of 286 per cent out of a rate of $1.37 per trip. Also note that by the abolition of the minimum they propose to reduce this excessive rate of $1.37 by 166 per cent.

Turn back now to Aberdeen & Rockfish. It gets $2.89 per trip for a 3-ft. unit hauled 36 miles, and the department admits that even according to its formula, the road gets no return, the letter D meaning deficit; but yet the abolition of the minimum would increase the already existing deficit by 83 per cent.

Now note the fact that the average space authorization on the vast majority of instances is for only three feet.

Relative Increases as Between Larger and Smaller Units

I have already discussed our desire to have rates fixed for each individual road, whereas the larger carriers want a uniform rate for all lines, though willing for our class of roads to be treated as exceptional. Our interests differ in another very material respect. They ask for a horizontal increase for all units, but a horizontal increase applied to the rates for a 3-ft. unit for short hauls means comparatively little money in the aggregate, whereas it would run up into large figures on the full cars and full train loads of mail over long routes.

We have been unable to find out upon what theory the relation of the rates for the different classes of mail service were originally fixed by this commission, but it is our surmise that the commission probably arrived at some grand total figure of compensation for the carriers as a whole, and then attempted to apportion it according to its best judgment; but applied to the different units of service rates which were more or less arbitrary.

The mail service rendered by our class of short lines is almost wholly retail, whereas the service rendered by the large lines is retail on their branches and both wholesale and retail on their main routes. It is conceivable that they might be quite content to take a loss on their inconsequential retail mail traffic if they can make a satisfactory profit on their wholesale long haul traffic. The car-foot-mile basis obscures and leaves wholly undetermined the relative fairness or unfairness of the particular rates for different classes of service. A horizontal increase based on the statistical returns for the total car-foot-miles from all classes of their service might produce a result satisfactory to the larger roads as a whole, because the margin of compensation of the larger units may be large enough to absorb losses on the smaller units; but the roads of our class have no such possible advantage.

Freight Car Loading

WASHINGTON, D. C

REVENUE freight car loading in the week ended January 28 amounted to 902,832 cars, a decrease of 41,047 cars from the corresponding week of 1927 and of 22,864 cars from 1926. Loading of grain and grain products, livestock, forest products and miscellaneous freight were larger than a year ago but coal loading, amounting to 176,139 cars, represented a decrease of 48,553 cars. Loadings in the Northwestern and Southwestern districts were larger than in the corresponding week of last year but in other districts were less. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, January 28, 1928

DISTRICTS	1928	1927	1926
Eastern	200,537	215,204	209,431
Allegheny	177,145	191,253	181,579
Pocahontas	51,711	58,743	56,014
Southern	145,980	154,203	153,323
Northwestern	114,612	114,332	113,856
Central Western	137,748	138,977	136,534
Southwestern	75,099	71,167	74,959
Total West. Dists.	327,459	324,476	325,349
Total All Roads	902,832	943,879	925,696
COMMODITIES			
Grain and Grain Products	53,177	46,394	45,266
Live Stock	32,719	31,237	31,278
Coal	176,139	224,692	183,104
Coke	10,989	12,759	18,195
Forest Products	66,087	65,205	72,565
Ore	7,607	10,457	9,396
Mdse. L.C.L.	244,469	245,169	249,333
Miscellaneous	311,645	307,966	316,559
January 28	902,832	943,879	925,696
January 21	884,095	936,160	921,643
January 14	906,734	942,731	931,735
January 7	754,062	933,890	907,622
December 31, 1927		679,600	734,281
Cumulative total, 4 weeks	3,447,723	3,756,660	3,686,696

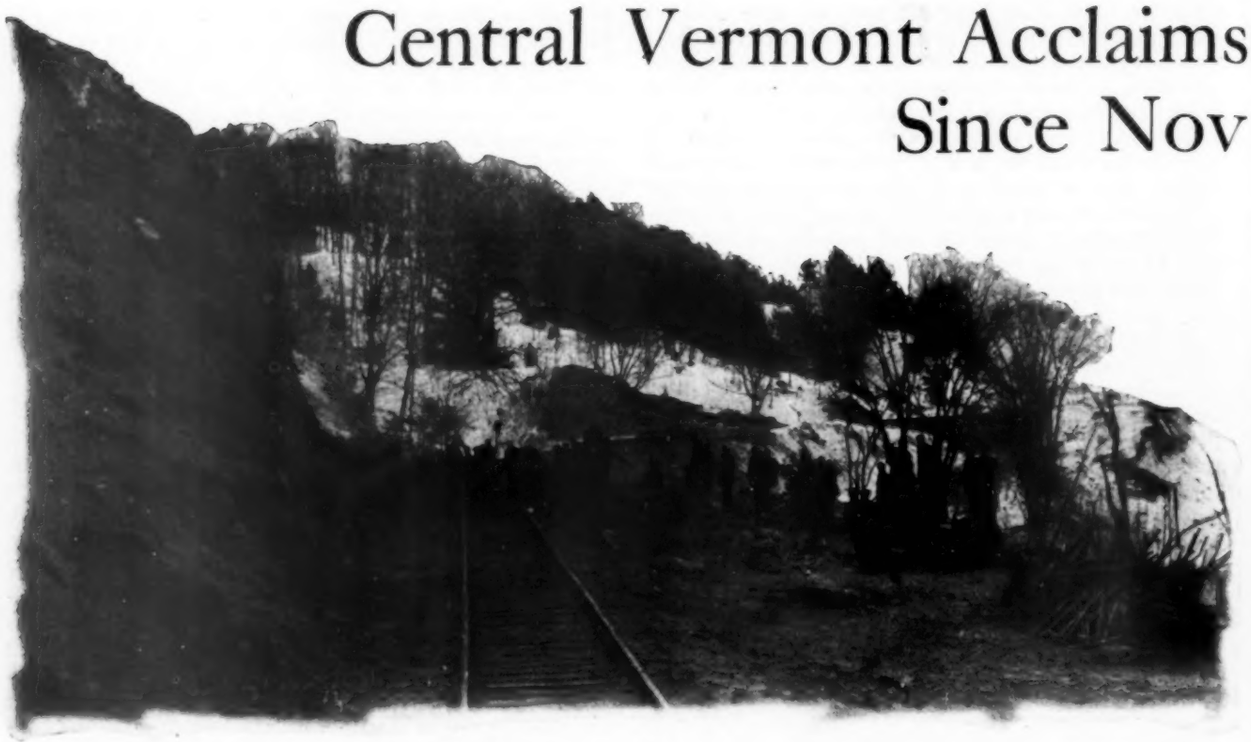
The freight car surplus during the period ended January 23 averaged 421,392 cars, as compared to 424,291 cars on January 15. The total included 197,501 box cars, 170,083 coal cars, 23,283 stock cars, and 14,228 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended January 28 totalled 62,104 cars, a decrease of slightly over 1,000 cars from the previous week, but an increase of 2,809 cars over the same week last year.

	Total cars loaded	Total cars rec'd from connections
TOTAL FOR CANADA		
Jan. 28, 1928	62,104	36,679
Jan. 21, 1928	63,168	35,509
Jan. 14, 1928	66,585	36,865
Jan. 29, 1927	59,295	37,091
CUMULATIVE TOTAL FOR CANADA		
Jan. 28, 1928	243,830	137,811
Jan. 29, 1927	233,777	138,087
Jan. 30, 1926	218,698	134,523

Central Vermont Acclaims Since Nov



Railroad Embankment Was Formerly to Right Where Gully Now Is.

A REMARKABLE achievement in reconstruction following widespread disaster was celebrated in Vermont on February 4 when the Central Vermont ran its first train, a special, through from St. Albans to White River Junction, 117 miles, which section has not had through train service since November 2 last.

The special train carried the Governor of Vermont, prominent citizens of the state, officers of the Central Vermont and the parent company, the Canadian National, and numerous representatives of the press. At all stations along the line citizens had turned out en masse with bands and flags to greet the train, and there were short talks by the Governor, Receiver John W. Redmond of the Central Vermont, and Sir Henry Thornton, president of the Canadian National.

Official Party at State House, Montpelier

At Montpelier, the capital of the state, the party left the train and adjourned to the state house where a large audience assembled to be welcomed by the mayor of that municipality and by the mayor of Barre and to hear addresses by the Governor, Receiver Redmond, Sir Henry Thornton and Homer Skeels, attorney for the Montpelier & Wells River.

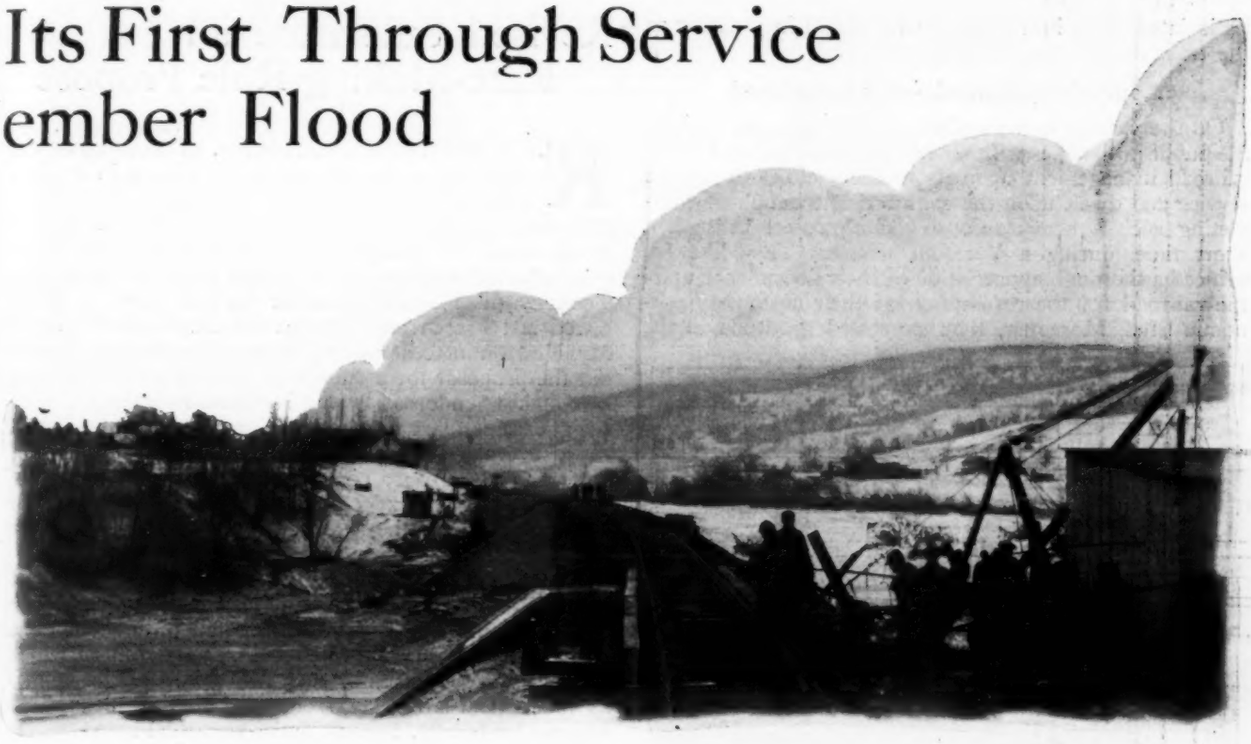
Desolation Still Apparent

Signs of desolation are still all too apparent in the valleys of the Winooski and White rivers, traversed by the Central Vermont. The railroad, while restored to through service at restricted speeds, is still far from its original condition. Tracks are supported in many places by trestles, in lieu of embankments or steel bridges washed away. There is little ballast in the track where flood damage occurred. The track at many places is badly out of line and surface, due to the difficulties of new embankment. There is still much shoo-fly construction which will require straightening. The road was fortunate, however, in being able to get all its washed out track jacked up before it was frozen in.

Nevertheless the accomplishment in restoring the line is remarkable, since the reconstruction forces have had to deal exclusively with frozen materials with constant reworking necessary to keep the new embankment in place. Permanent reconstruction cannot be begun before the spring thaw and will probably not be completed before June 1.

The flood loss to the inhabitants of Vermont has been widespread. True, the damage was restricted to relatively narrow valleys, but it is the valleys in Vermont where most of the people live and conduct their business. A disaster scourging the same area—or even many times the area—of hill tops would have inflicted nothing like the damage done by this flood. The waters descended so quickly that protective measures, such as were possible in the case of the Mississippi flood, could not be taken. There was no warning in the Vermont flood and the entire damage was done in a period of 24 hours. Not only were a large number of lives lost and homes destroyed, but the very means of livelihood of many of the

Its First Through Service ember Flood



The Road Had to Restore Many Washed Out Bridges.

people was taken from them along with all their personal property, since mills, warehouses and stores were seriously damaged or destroyed. Fertile farm land was scoured down to bed rock in many cases or overlaid with a deposit of stone, and much live stock perished.

To add to the trials of the afflicted territory, communication with the outside world was removed—the railway and highways were washed out, bridges were swept away and telegraph and telephone lines broken.

Reconstruction work began immediately. Communication was established with isolated communities over mountain roadways. The railroad pushed its reconstruction from both north and south and started a construction gang into Montpelier from the east, repairing the Montpelier & Wells River as it went, and as soon as its line at Montpelier was reached it was able to take up the battle on two more fronts—northward and southward. In addition, individual jobs of reconstruction were started at many other points which could not be reached by rail by sending in motor truck construction gangs. Telegraphic and telephonic communications of a sort were quickly restored.

Thoroughgoing Economic Revival Impossible without Railroad

However, with all the improvement possible in the first few weeks following the flood, assuring a supply of the bare necessities of life and some communication, no earnest revival of the economic life of the section was possible without the railroad. The section is ordinarily of easy access to the large centers of population which surround it. For the past three months only tedious, slow and costly methods of transportation have been available. The movement of freight in bulk has been impossible, with the consequence that the revival of the industrial and economic life of the section has made little headway.

The return of the railroad to service, however, makes possible once more the renewal of ordinary business activities in the section. Mills and quarries can now resume production and raw materials and supplies can enter in quantity. The citizens of the various communities, by their reception of the special official train, gave unquestionable evidence of their appreciation of the value of the railroad to them. At each scheduled stop a large proportion of the population, headed by municipal officers

At More Important Towns the Citizens Were Greeted from the Rear Platform

Sir Henry Thornton (speaking) and, to right (hat in hand) Governor Weeks

and leading citizens, was on hand to greet the official party. All the school children were out bearing flags. Bands played. Fire apparatus sirens and factory whistles hooted a welcome and small boys joined in with tin horns. The same gala spectacle awaited the train at smaller places where no stops were made, and from many

an isolated farm house a flag was waved in greeting as the train moved cautiously along.

Appreciate Dependence on Railroad

On the various occasions where addresses were made, the public authorities without exception complimented the railroad management upon its untiring effort to restore service and dwelt upon the engineering triumph of completing such a heavy reconstruction project in such a short time, during a Vermont winter. They likewise evinced a thorough appreciation of their dependence upon the railroad for the resumption of their customary economic life. Moreover, they expressed gratitude to the

At Two Places New Benches Had to Be Cut into Hill Sides

Canadian National for its executive and financial co-operation with the smaller company in aiding its restoration, which the smaller line could not have accomplished with such celerity had it been forced to depend entirely upon its own resources. Gratitude to the Canadian National extends to its owners, the Canadian people, and the occasion was made one of recognition for international co-operation and sympathy.

Plan a Better Road Than Ever

The railroad officers who spoke gave recognition to the hardy optimism of their patrons. Sir Henry Thornton stated definitely the policy of the Canadian National Railways looking to the restoration of the Central Vermont to an even better physical condition than before, and its maintenance as a link in a through line from New England to the West.

As an indication of the magnitude of the work accomplished and still in hand by the railroad the following table of forces and equipment is given:

2500 laborers	25 work trains
150 bridgemen	6 rapid unloaders
150 other skilled	4 Jordan spreaders
6 steam shovels	6 pile drivers
2 gasoline shovels	150 boarding cars
400 ballast cars	6 camps for laborers
12 unloading plows	50 auto trucks
	50 teams

At this writing a total of 690,000 cu. yd. of filling has been handled. Permanent work, including ballasting will begin after March 1.

Through passenger service on restricted schedules began on February 4 and through freight service is scheduled to begin February 12. Limited trains will continue to be detoured via the Rutland until such time as the Central Vermont track is in shape to permit high speeds.

Revised Substitute for Rate-Making Rule Proposed

WASHINGTON, D. C.

REPRESENTATIVE Newton, of Minnesota, on February 1 introduced in the House in revised form his bill to substitute for Section 15a of the Interstate Commerce Act a new rule of rate-making which omits the recapture scheme and also all reference to a percentage of fair return based on valuation. The new bill, H. R. 10,376, like the bill which he introduced last March and like the bill H. R. 8,833 which Mr. Newton introduced on January 7 by request, carries out the proposal for a substitute for the present rule of rate-making endorsed by the National Industrial Traffic League at its last annual meeting. It includes, however, several provisions not in the previous bills on this subject. The House committee on interstate and foreign commerce is expected to hold hearings on the bill after it concludes the hearings now in progress on the Parker unification bill.

The latest Newton bill provides that in the exercise of its power to prescribe just and reasonable rates the Interstate Commerce Commission "shall initiate, modify, establish or adjust such rates so that carriers as a whole (or as a whole in each of such rate groups or territories as the commission may from time to time designate) will, under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, have opportunity to earn an average annual net railway-operating income sufficient, as nearly as may be, to pay the interest on funded and other outstanding indebtedness and to provide such return upon the properties devoted to public use not represented by indebtedness, as shall in the judgement of the commission maintain a proper basis of credit to enable the carriers as a whole to meet the transportation needs of the country: Provided, That the commission shall have reasonable latitude to modify or adjust any particular rate which it may find to be unjust or unreasonable, and to prescribe different rates for different carriers or for different sections of the country."

The earlier bill did not include the reference to groups of carriers and its standard for the amount of allowable net railway operating income was the amount "sufficient, as nearly as may be, as the basis of such credit as in the judgement of the commission may be requisite to meet the transportation needs of the country."

Whereas the former bill would direct the commission to fix a period of years for which the average net income shall equal the amount found necessary, the new bill says that "in determining the amount of net railway-operating income which the public interest requires that carriers shall have opportunity to earn, the commission shall consider, among other things, the requirements of commerce for improvements and extensions of carrier property and the cost of obtaining capital therefor, and also the railway-operating revenues and cost of service for such period as shall, in the judgment of the commission, reflect average or normal conditions." Also the commission would be directed to "investigate and determine from time to time what return shall be required to comply with the law and shall make public its findings and conclusions with respect thereto."

Upon passage of the bill the commission would terminate all proceedings then pending for the recovery of "excess" earnings, cease to make cash loans from the general railroad contingent fund, and distribute to the carriers the amounts recaptured under the present law.

The Manufacture of Foreign Rails

A study of 15,000 tons rolled in Germany in 1926 for the Boston & Maine

By C. W. Gennet, Jr.,*

Manager, Rail Department, Robert W. Hunt Co., Chicago

ANNOUNCEMENT was made in the spring of 1926 that the Boston & Maine had contracted with the German steel makers, Messrs. Fried Krupp, for the manufacture of 15,000 tons of basic open-hearth steel rails at the Rheinhausen Works, for delivery to Boston, Mass. This contract covered 11,000 tons of 100-lb. rail of what is known as the New York, New Haven & Hartford section and 4,000 tons of 85-lb. rail of the A. S. C. E. section. The contract provided that the basic open-hearth steel rails were to conform to the specifications of the American Railway Engineering Association adopted on March 12, 1925. These specifications were modified slightly to permit all of the drop tests to be made on pieces resting head up in the drop-testing machine, and as the Krupp drop-testing machine had a tup weighing a metric ton (2204 lb.) the height of the drop test as specified was changed to 17.2 ft. for the 100-lb. rail, and 14.6 ft. for the 85-lb. rail. In view of the fact that the supports of the Krupp machine were on a solid foundation rather than on springs, as in this country, the testing was probably a little more severe than would otherwise be the case.

The rails were rolled at the Rheinhausen Works from steel made by the straight open-hearth process, in four tilting basic lined furnaces, each of approximately 120 tons capacity. The ingots were bottom cast in groups of four. They were 25 in. square at the bottom and 21 in. square at the top, with 4-in. radii at the corners. They were poured 88 in. high for the 100-lb. rail and 100 in. high for the 85-lb. and weighed respectively about 12,500 lb. and 13,500 lb. After about two hours in the pits, the ingots were bloomed and rolled direct into rails. The blooming was in a two-high 43-in. engine-driven mill, rolling the top end of the ingot first and reducing it in 21 passes, after six turns to a bloom approximately 8⅜ in. by 7⅞ in. After a top discard of about 12 per cent and a bottom discard of 5 per cent, the blooms went without reheating into a three-high 33½-in. roughing stand and a three-high 33½-in. finishing stand, both being engine-driven. The blooms received 9 passes in the rail mill for the 100-lb. section and 11 for the 85-lb., so that the total number of passes from the ingot to the rail was 30 or 32, depending on the section being rolled. The rails were sawed to length by a single hot saw, cutting each rail slightly long to allow for milling the ends to practically an exact length of 39 ft. It is important to note that there was no hot cambering machine, the rails going on to one of the four hot beds direct from the mill and hot saws, and being neither spaced nor turned while cooling.

The inspection was conducted by American inspectors sent abroad for this particular work and it can be assumed, therefore, that the surface inspection of the Krupp rails was in every way comparable with the practice that would be followed at American mills. The testing was in accordance with the requirements of the specification, except as already noted. It is especially significant to observe that no "X-Rayls" were produced. "X-Rayls," it will be recalled, are the result of finding the fracture of at least one of the test pieces from each heat either piped or segregated.

The chemical composition of the Krupp rails is mostly in line with American practice, except perhaps that the sulphur content is low. The ability of the mill to keep the carbon content well on the high side of the mean of the specified range is easily recognized.

The specification provided for dividing the acceptable rails into six different classes, each identifiable by the color of paint used on the ends. These results on the Krupp rails are at once comparable with results of American practice and carefully kept figures covering approximately 450,000 tons of rails rolled to this specification at the different mills of the United States are shown in comparison in one of the tables.

Outstanding Features of Krupp Practice

Two notable departures from American practice on rails were outstanding features of the Krupp practice. One was the bottom-casting of the ingots, and the other

Comparison of Percentages of Acceptable Rails

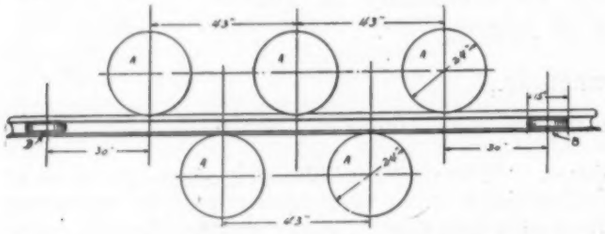
Classification of Rail Shipped	Percentage of Total Shipments	
	Krupp	Average American Practice
No. 2 rails	6.6	5.8
"X-Rayls"	None	2.2
"A" rails	10.4	12.9
Short length rails	4.8	4.1
High carbon rails	39.8	30.3
All other rails	38.4	44.6

—perhaps of greater importance—was the fact that all the rails were straightened by passing through a roller straightening machine, the common type of gag press being used only as a last resort for rails that the machine would not make straight.

Probably the most important requisite of rails for many years has been their soundness; that is, the freedom of the metal from pipe and segregation. This matter has been discussed repeatedly and various devices of ingot practice and of testing have been tried whereby the presence of piping and its accompaniment could be either eliminated or restricted. An extra price is sometimes paid for rails with the understanding that an abnormal top discard, frequently as much as 25 per cent shall be made for each ingot. Specifications almost invariably have been drawn with some provision whereby the tendency for interior defects in the top rails of ingots could be detected, and the American Railway Engineering Association specification, under which these Krupp rails were rolled, requires that a classification known as "X-Rayls" be made of those whose fractured test pieces show interior defects; meaning, chiefly, piping and segregation. A large tonnage of American rails tested in the past year showed that on the average 2.2 per cent of the total shipments were "X-Rayls," but there were none among the Krupp rails. The Krupp ingots were large, in fact heavier, because of being tall-

* Abstracted from a paper to be presented before the American Institute of Mining and Metallurgical Engineers, New York, on February 20, 1928.

er, than most American rail ingots; and, according to the inspectors, the steel for obvious reasons, was poured very hot; yet there was apparently complete freedom



The Arrangement of Rolls in the Roller Straightening Machine for Heavy Steel Rails at the Krupp Works

from piping. In view of the fact that a great many observations were made of the fractures of "A" rail test pieces, this is a remarkable result, for which bottom-casting must have been largely responsible. American steel-makers frequently resort to bottom-casting when making ingots for special purposes, but as far as known ingots so cast have not been rolled into rails.

Some of the Krupp rails were analyzed in order to obtain an idea of their chemical condition. These chemical analyses indicate that segregation is present in these large bottom-cast ingots, possibly to about the same extent as in the shorter and stubbier top-cast American ingots. As far as actual piping is concerned, the practice evidently has much to commend it, and it would not be surprising to find that, with the restricted tendency to pipe, the steel would be more free from segregation.

The standard practice of straightening rails in American mills is to use a gag press having fixed supports about 60 in. apart on which the cold, or hand-warm, rail rests. At the order of the "straightener," sighting the rail from one end, a gag is inserted on the rail between the supports and the moving ram of the press then bends the rail. Thus, by continued effort, the rail being moved lengthwise, and turned, as desired by the "straightener," the proper straightness is obtained quite regardless of the length of the rail. Prior to this straightening process, the rails are passed through a hot cambering machine located between the hot saws and the hot beds. The function of this machine, of course, is to put a curve in the hot rails so that they will be as near straight as practicable when cold, in spite of their unsymmetrical cross-section. It seems quite unnecessary to comment on the probable abuse, if not actual damage, that a cold rail of high-carbon steel receives when being subjected to the blows of the straightening press, and it is to be remembered that each blow is one well beyond the elastic limit of the metal and that the gag frequently leaves an impression on the surface.

The roller straightening machine in use at the Krupp Works consists of three top rolls and two bottom rolls, all power driven, and somewhat grooved to take a little of the head and base of the rails when head up in the machine. Vertical pinch rolls bearing on both sides of the web of the rails assist in feeding the rails through. All of the rolls are movable and their position is largely dependent upon the operator and his idea of the condition of the incoming rail. The whole machine is heavily housed. When rails of a different section are to be straightened, the grooves must be changed in the horizontal rolls, but this is easily accomplished because the grooves are really formed by collars on the main barrel of the roll, which are held on by large lock nuts.

There was no hot cambering machine in the Krupp Works. Consequently, these rails, of which the cross-section was very unbalanced, cooled on the hot beds with a head-low sweep amounting to as much as 12 in. The feed mechanism on the entering side of the roller straightener was nevertheless adequate in every way to meet this condition, with the result that the rails were fed through the machine one after the other fairly fast. It required approximately 15 sec. for a 39-ft. rail to go through the machine, though this time could easily be reduced by running the machine somewhat faster. The temperature of the rails at the time of straightening was apparently of no great importance, and varied about as in this country, from stone cold to slightly warm.

It is obvious, from the arrangement of the rolls, that about two feet of each end of the rail would be largely unaffected. Hence, if a short bend or kink occurred near the end of the rails, it had to be eliminated after roller straightening by going to the customary gag press. Likewise, if there was some condition that the roller straightener did not rectify, the rail was sent to the gag press. From 10 to 20 per cent of the rails had to be gagged, but if a hot cambering machine had been in use, it is altogether likely that it would have been necessary to deal with a much smaller proportion.

The rails straightened in this roller machine suffered considerable punishment. Of course, they had been strained well beyond the elastic limit, as was proved by the fact that they were quite free from the usual mill scale on the head and base, excepting at the extreme ends. The author, however, feels that this method of straightening, which could unquestionably be greatly improved by having good hot cambered rails to start with, is likely to be much less detrimental to rails than is the series of from 5 to 15 blows that the average rail receives in a gag press and also is likely to result in a more accurate line and surface for the finished rail.

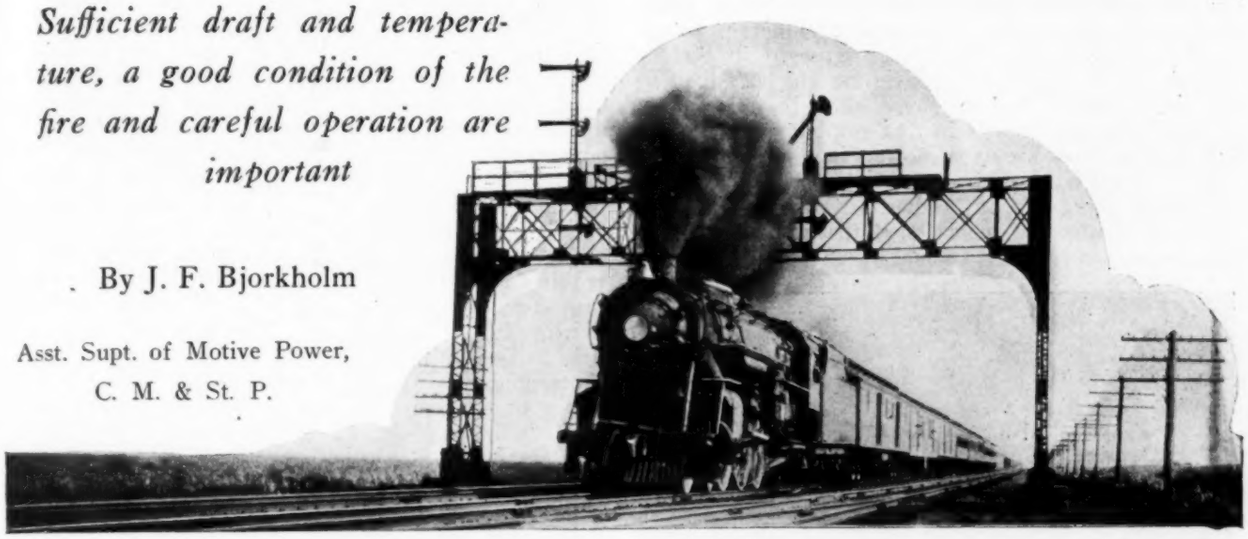
Rolling and Testing Results

	85-lb.		100-lb.		Total	
	No.	Per Cent.*	No.	Per Cent.*	No.	Per Cent.*
Furnace melts made	45		134		149	
Heats cast and rolled	88		242		330	
Ingots rolled	920		2,807		3,727	
Rails per ingot (nominal)	10		8			
Rails rolled	9,119		21,784		30,903	
Rails restraightened (following inspection)	102	1.1	357	1.6	459	1.5
Cut for flaws	4		106		110	
Cut for other reasons	386		437		823	
Total short rails	390	4.2	543	2.5	933	3.0
Made No. 2 for flaws	456		1,421		1,877	
Made No. 2 for other reasons	0		31		31	
Total No. 2 rails	456	5.0	1,452	6.6	1,908	6.2
Rejected account surface defects	250		713		963	
Rejected account other reasons	10		8		18	
Total rejected (excepting for tests)	260	2.8	721	3.3	981	3.2
Rejected account failure at drop test:						
"A" rails	26		135		161	
"B" rails	26		71		97	
"C" etc. rails	56		290		346	
Total rejected at drop test	108	1.2	496	2.3	604	1.9
Total all rejections	368	4.0	1,217	5.6	1,585	5.1
Made "X-Rayls"	0		0		0	
Heats on which rails failed at drop test:						
"A" rails	3		11		14	
"B" rails	3		6		9	
"C" rails	1		4		5	
Total heats rejected at drop test	1		4		5	

* Per cent. of number of rails rolled.

Preventing Excessive Smoke*

Sufficient draft and temperature, a good condition of the fire and careful operation are important



By J. F. Bjorkholm

Asst. Supt. of Motive Power,
C. M. & St. P.

ONE of the most important problems, in fact, a serious problem confronting bituminous coal burning industries, is the problem of smoke abatement. The question is an econmic issue of major importance because it does not only embrace the particular industry or community directly affected, but the coal producing regions serving the territory involved and may spell industrial progress or retardation. We all admit that dense black smoke is a nuisance and toward the elimination of which we must all lend our aid.

One of the serious questions confronting any one burning bituminous coal, as well as the producers of this product, is that frequently legislation is passed prescribing a certain kind of fuel for the purpose of eliminating smoke without any thought of the economic issue involved.

Education on the Subject Important

In order that the desired result may be accomplished in the matter of smoke abatement, education on the subject is a very vital factor. While at first it may appear to be a simple matter to avoid offensive smoke from a locomotive or a power house boiler, we find that the problem is sufficiently complicated to cause many to proceed on entirely wrong theories. The reason for this, as I see it, however, is frequently because thorough consideration has not been given to the principles of combustion before some action has been taken towards smoke elimination. Please bear in mind that "smoke painting" or the "whitewashing" of smoke, and the actual prevention of smoke are two different things,—one entirely wrong, the other a procedure along proper scientific lines—and still it is surprising to find how many neglect the problem of preventing the formation of smoke as far as it can be prevented and are entirely contented with "smoke painting." The latter is merely camouflage as, while the smoke may not appear black when leaving the stack, or chimney, the fact remains that the offensive smoke has merely been discolored by wet steam, or vapor, while, with proper methods, the actual formation of smoke has been prevented by improved combustion and a fairly clear stack is the result. In this connection I might mention that the terms "smoke burning" or "smoke consumption" are misnomers, because smoke already formed, ordinarily cannot be burned or consumed. In order to get the desired result, the smoke must be prevented from forming.

We must recognize that many an ordinance regulating this or that practice has come into existence on account of certain abuses, whatever their nature may be, abuses that could just as well have been corrected prior to such legislation as subsequent to it. In the matter of smoke from locomotives, it is not uncommon to find cases, particularly at small country towns and occasionally in our large terminals where a fireman thoughtlessly will permit clouds of the densest kind of smoke to be emitted, polluting the atmosphere and blackening buildings in a manner that causes one to wonder why every town and village has not placed some kind of an ordinance on its statute books with a view of combating the smoke nuisance.

The Fireman and Perfect Combustion

When we think of smoke abatement, we usually think of the fireman on the locomotive because, particularly after he has been in service a sufficient period to be classed as an experienced fireman, we look to him to fire the locomotive in a manner that no reasonable causes for complaints be forthcoming. The engineer, while he must be relied upon to educate the new fireman with the assistance rendered by traveling engineers, traveling firemen, fuel supervisors and smoke inspectors and, of course, must assume his share of the responsibility, is usually occupied with many other duties and cannot always be expected to watch the stack. The fireman, on the other hand, should experience no difficulty in maintaining the fire in such a condition that no objectionable smoke be emitted. Given the proper equipment with which to do the work, he should be called upon to do his work properly. It is true that there are cases when the combination of maintaining maximum steam pressure and also guarding against smoke violation is somewhat difficult, particularly when an engine is called on to deliver suddenly its maximum effort without first giving the fireman an opportunity to get the fire well started. Such cases are in the minority, and even in such cases a careful fireman can do wonders in guarding against black smoke.

Perfect combustion is difficult to attain in a locomotive

* Abstract of a paper read before a meeting of the Kansas City, Mo., Committee on Smoke Abatement, held January 10, 1928.

firebox, but through careful studies of the various elements entering into the matter of combustion when building the locomotive, coupled with skillful firing, fairly good results are attained. Locomotive builders in recent years have given more thought to economy in fuel in designing new engines and converting old ones than to any other feature, and we must admit that they have accomplished considerable in that respect. Economy in fuel consumption means a slower rate of combustion which in itself is an aid in the reduction of black smoke.

Without going into any technical terms in the matter related to combustion, we all know that in order to burn coal properly, a sufficient amount of air must be admitted

If the Stoker is not Properly Handled Excessive Black Smoke Results

into the firebox, or furnace, as the case may be, some of which should be admitted to the top of the fuel bed.

Switching Locomotive Smoke a Problem

The greatest difficulty in avoiding offensive smoke is usually on switch and transfer engines, owing to the very nature of their work and on road engines starting out of the initial terminal, particularly if a hard pull has to be contended with before the fireman has had an opportunity to get the fire well started. Under such circumstances it is usually necessary to depend on the blower and the so-called "smoke burners" which are not smoke burners but smoke preventors by which additional air is admitted into the firebox, causing the combustible matter escaping from the coal to ignite and burn instead of escaping through the smoke stack in the nature of black smoke, which is fuel only partly burned.

The method employed is usually a number of so-called combustion tubes located in the side sheets of the firebox and through which a steam jet causes a flow of air to enter the firebox above the burning coals. While in most instances the arrangement is rather crude and too much steam is used, the principle is right and no doubt can be considerably improved on without much expense. In this connection it should be borne in mind that there are no properties in the steam which aid combustion; the steam jet is merely the mechanical means of causing the air to be drawn into the firebox. It is true, of course, that inasmuch as steam is nothing but water, and water contains a certain amount of oxygen, there is a small amount of oxygen present in the steam, but not of sufficient quantity to be considered of any value as an agent aiding combustion. When steam is admitted into the firebox, it is decomposed by the heat into its constituents, hydrogen and oxygen. This process, however, absorbs as much heat as possibly can be developed by the combustion of the hydrogen formed and thus it follows that very little gain in that respect can be accomplished by the mere introduction of steam. On the other hand, there is always the possibility that the introduction of steam through its decomposition causes a reduction in temperature to the detriment of proper combustion. The practice of inserting several steam jets into a firebox unless the jets induce an air current to flow, is merely "smoke painting" and an expensive practice. In this connection it would perhaps be well to mention that it requires approximately 320 lb. of coal per hour to furnish steam for a ⅜-in. pipe with the steam constantly flowing at 190 lb. pressure. This is a very important item to keep in mind when blowers are working, sometimes unnecessarily, and blowers usually have a greater steam supply than that flowing through a ⅜-in. pipe; in fact either a ¾-in. or 1-in. pipe is usually employed.

A sufficiently high firebox temperature is also a necessary factor in aiding combustion and thus reasonably guarding against objectionable smoke. The air entering the firebox above the fuel bed should enter in several small jets instead of one or two large jets. The firebox door, if open, will usually serve the purpose, but is an expensive and unsatisfactory practice as through this method the air is admitted in too large a quantity in one place which absorbs too much of the firebox temperature and thus causes an excessive fuel consumption, as well as being detrimental to the firebox and flues.

Two of the most essential, but at the same time very simple rules to remember are: First, that gases that have been cooled below the temperature of ignition, cannot be burned merely by furnishing a supply of air. Second, that when the gases are supplied with air, they can be burned if their temperature is raised to the ignition point. A temperature of at least 1,800 deg. F. is essential to insure fairly satisfactory results. This temperature can be judged by the bright red color of the fire. Bright orange or white heat with a temperature of 2,100 deg. and 2,350 deg. F., respectively, are of course, to be preferred, while a dull red color with a temperature of approximately 1,500 deg. F. is too low to prevent a lot of unburned gases from escaping through the smoke stack.

The Vertical Type Boilers Difficult to Control

The boilers usually giving the most trouble in the matter of smoke violations are the vertical type boilers usually employed on locomotive cranes of various kinds that are to be found in a railroad terminal. On account of the very short flame-way possible with this type of boiler, the gases escape before given sufficient time to burn thoroughly. The best method of guarding against objectionable smoke from this type of boiler is the method of injecting several small air jets towards the center of the firebox, thus insuring abundant oxygen, as a rule not otherwise available in the fireboxes of this type of boilers.

In the matter of stationary power plants, the question of smoke elimination can more readily be regulated than it is possible on locomotives or cranes, as with the former the question of limitations is not as pronounced as with the latter. As with the locomotives, the load, of course, largely enters into the problem, but with the proper stack capacity and the proper brick work with baffles properly placed, ordinary care on the part of the fireman should cause a fairly clean stack. As in the case of locomotives, carelessness too often is the direct cause of the trouble.

In order to accomplish good results, however, good

tools must be furnished the man who makes or prevents the smoke—the fireman. We must always bear in mind, however, that the solution of the problem depends more on intelligent work on the part of the fireman, than any device that can be put at his disposal. It is necessary that the grates be thoroughly clean so as to permit, as far as possible, an unrestricted flow of air to enter the firebed and without which the fireman is placed at a decided disadvantage. In addition, the ashpan should be so constructed that sufficient air is always available. The grate shaker rigging should be so maintained that the grates may be shaken whenever necessary so as to cause the dead ash, blocking the entrance of the air into the firebox, to be removed. The brick arch should be properly maintained and cleaned at regular intervals, the latter also being true with the flues. In addition, the front end appliances should be properly adjusted so as to insure a good steaming engine and with a good steaming engine at his disposal, the fireman should experience very little difficulty in so firing the locomotive that complaints should be the exception instead of the rule.

The proper method of firing at all times is, of course, to put into the firebox at each firing only a sufficient amount of coal that will insure proper combustion. By following such a practice, a clean fire can be maintained without any difficulty and in addition, an economical use of the fuel is the result. The most wasteful method of firing is, of course, to throw into the firebox large quantities of fuel at one time. This is usually accompanied by the safety valves opening and too much water being put into the boiler. This, in turn, causes too much time to elapse before the next fire is needed, with the result that the firebox temperature has been lowered considerably and as a result, black smoke will follow. If, when within the terminal limits where smoke ordinances usually govern, the fireman will fire carefully and the engineer co-operate in operating the engine in a manner consistent with conditions, with a conservative use of the blower, ordinarily there ought not to be much trouble from smoke. Occasion may at times demand the use of the so-called "smoke burners" for a short time.

Excessive Smoke Caused by the Fireman not Having His Fire Properly Prepared When the Engineman Shut Off to Drift Down Grade

Commission Objects to Force Account Contracts

AS reported briefly in the *Railway Age* on January 14, page 156, a report issued by the Interstate Commerce Commission on January 3 severely condemns the practices pursued by the Pittsburgh & Lake Erie in the contracting of track maintenance work on a force account basis. The following abstract of this report supplements the presentation of the commission's concluding statement appearing in the issue referred to.

Terms of Contracts

Under the terms of the verbal agreements with Trelfall and with Corrado, two of the contractors, the Pittsburgh & Lake Erie designated the number of men to be located at the contractors' various camps; designated the rates of pay of all men employed by contractors, these rates of pay varying according to conditions of the labor market; provided living, kitchen and dining quarters of men in the camps, as well as necessary equipment, fuel and light; provided transportation for men employed at points on its line, and reimbursed contractors for fares paid for men employed at off-line points to the nearest points on the railroad's line; reimbursed contractors semi-monthly for actual pay rolls of all men furnished by them, for sufficient labor pilots to pilot men to the various camps, and for necessary camp superintendents, cooks and camp help; paid the premiums for compensation insurance on men on the contractors' pay rolls, and paid the contractors, semi-monthly an amount equal to 10 per cent of the actual pay rolls. The contractors employed the men without office or fee costs to the railroad and were responsible for all camp equipment furnished by the railroad, ordinary wear and tear excepted.

The following statement shows the approximate percentage of the maintenance of way work performed by contractors' forces during the period here in question. These figures are based on service hours of track laborers.

	Per cent
1920	35
1921	58
1922	60
1923	67
1924	71
1925	71

The company forces varied from a maximum of 1,635 men in December, 1920, to a minimum of 320 in March, 1925. The contractors' forces varied from a minimum of 99 men in February, 1920, to a maximum of 1,787 men in November, 1923. It will thus be seen that company forces are being gradually transferred to contractors' rolls with a corresponding increase in amounts paid to contractors.

A comparison of the hourly rates does not show the relative cost to the railroad on the different bases of employment. The hourly rate for employees on the company roll represents the total cost, whereas to the hourly rate for employees on contractors' rolls must be added the allowances made the contractors for operating commissaries and camps, which include reimbursement for water, fuel and light; wages of camp superintendents, cooks, flunkies, crumb bosses and pilots; miscellaneous expenses; and in addition thereto, 10 per cent on the entire pay roll of the contractors. Because of this the cost to the railroad for track and roadway work performed by men on the contractors' rolls, per service hour, is considerably in excess of the rates paid

the men. And these hourly rates do not include the cost to the road of providing quarters, either permanent or in outfit cars, mattresses, blankets, and equipment for kitchen and dining quarters.

The table shows the average cost per hour for productive labor on roadway and track, by annual periods or portions thereof from March 1, 1920, to June 30, 1925. The contractors' rate is computed by dividing the number of hours worked by roadway and track laborers on the contractors' rolls into the total amounts paid contractors, exclusive of the amounts paid to track and roadway foremen, and for compensation insurance. The railroad rate is computed by dividing the number of hours worked by company roadway and track laborers into compensation paid such employees as shown by the pay rolls.

Cost per Hour for Roadway and Track Labor Employed Direct and Under the Contract System

MARCH 1, 1920, TO JUNE 30, 1925

Period	Average cost per hour in cents: Contractor's Forces	Railroad Forces
10 months, 1920	66.95	50.23
1921	34.87	44.51
1922	36.33	37.44
1923	49.62	39.30
1924	46.11	39.85
6 months, 1925	43.51	40.29
Mar. 1, 1920, to June 30, 1925	45.35	42.76

The payments to Trelfall and Corrado for the period from May 1, 1920, to June 30, 1925, totaled $6,083,068, of which $4,865,071 was paid for the foreman and laborers on productive work on the roadway. The remainder amounting to $1,217,997, represents what was paid to the contractors for superintendence of the commissaries and camps, wages of cooks, flunkies, and other commissary and camp labor, 10 per cent of the total payroll, compensation insurance, and miscellaneous expenditures. Deducting the total amount paid for premiums on compensation insurance, $96,640, from the latter amount, on the theory that the carrier would have paid the compensation insurance premiums in any event, there remains $1,121,357, which is 23 per cent of the amount actually spent for track and roadway foremen and laborers on the contractors' rolls. This $1,121,357 contains the "plus 10 per cent" to contractors as well as an approximate 13 per cent for additional overhead, which includes camp superintendence, $89,597; wages of cooks, flunkies and other commissary and camp labor, $467,444; and miscellaneous expenditures amounting to $21,996.

It was stated in behalf of the Pittsburgh & Lake Erie that it had "made a careful, detailed study in order to determine the possibility from an economic standpoint, and standpoint of efficiency, as to whether or not the railroad company could run those camps," and that "we arrived at the conclusion that it was more economical and more efficient to have it done by contractors than by the railroad company."

Exhibits and testimony were presented based upon estimates of what the added cost would be to itself if it operated commissaries and recruited its own labor. One of the exhibits is set forth below:

Estimated Cost of Company Labor to the P. & L. E. If the Railroad Operated Camps and Obtained Its Own Labor

Based on 1,200 laborers—30-man camp—25-day month

30 Laborers at 9 hr. at 40 cents per hour	$108.00	per	day
1 Cook at $125 per month	5.00	"	"
1 Flunky at $100 per month	4.00	"	"
1 Crumb boss at $100 per month	4.00	"	"
11 Pilots (based on 1 pilot for four camps) ¼ × 9 hr. × 40 cents per hour	.90	"	"
1 Superintendent—¼ × 9 hr. × 70 cents per hour (1 superintendent for 4 camps)	1.58	"	"
1 Camp clerk	4.00	"	"
2 Labor agents at $3,000 per year	.50	"	"
1 Supervisor of labor at $360 per month	.36	"	"
Extra general office expense, clerical ($14,180 per year)	1.18	"	"
Truck transportation, including drivers	1.07	"	"
Telephone and stationery ($600 per year)	.05	"	"
Labor office rent (2 offices at $1,500 per yr, ea.)	.25	"	"
Compensation on labor at 2 per cent	2.48	"	"
	$133.37	"	"

270 hr. effective labor.

Cost per hour of effective labor—$0.4940.

It is assumed that the cost of lost meals, ice, laundry, and other incidental expenses will be covered by the amount of board charged the laborers.

This exhibit shows that to the base rate of 40 cents per hour for track labor there is added an estimated 9.4 cents for recruiting and commissary service. The analysis shows that 6.7 cents of this 9.4 cents is now being paid by the railroad and not by the contractors. This leaves 2.7 cents per hour as the added cost under this analysis, to be paid by the railroad. Applying the increment of 2.7 cents to the total service hours of contractors' track and roadway forces, 13,036,120 hours, the resulting increase in cost would amount to $351,075. This amount is $190,345 or approximately 35 per cent less than the $542,000 paid to contractors as the 10 per cent of pay rolls. The railroad's exhibit was based upon 1,200 track and roadway men on contractors' rolls. The record shows that during the periods in the following years the average number of contractors' employees were respectively:

1920	303
1921	791
1922	702
1923	1,206
1924	1,171
1925	1,125

It is shown that during certain periods the productive track labor man-hour cost more under the contracting plan that it cost per hour for men on company rolls. During other periods the cost was less. The railroad claims a net gain of $155,918 for the five years and four months period. This estimate is based on contractors' rates plus 10 per cent applied to the laborers working hours on track and roadway work. No consideration is given to the camp and commissary costs which must necessarily be included and amount to $89,597. for camp and commissary superintendence, $467,444. for cooks, flunkies, etc., and $55,704. for the 10 per cent on the payroll of these employees. Items of miscellaneous expense amounting to $21,996. were also ignored, all making a total of $634,741.05 which was not considered in the estimate.

Our investigators show a net loss to the railroad of $611,268. They applied railroad rates to the service hours performed on track and roadway by contract forces and compared the results with the total cost to the road for contractor's service exclusive of wages of track and roadway foremen and compensation insurance, which items it would have borne had it carried the men on its own roll.

COLONEL SIR JOHN W. PRINGLE, C. B., chief inspector of railways for the Ministry of Transport (England) is the chairman of a committee which has been appointed to review the recommendations made by the automatic control committee in 1922, and to report if any alterations ought to be made in that committee's recommendations. The committee will consider especially non-contact types of apparatus, and no further attention is to be given to contact devices which have already been considered. The committee consists of nine members; six mechanical, engineering and operating officers of prominent roads; Mr. Charleton, representing the National Union of Railway Men and Lieutenant Colonel Mount, government inspecting officer.

Rock Island Increases Track Capacity by Either-Direction Signaling

Delays reduced, relieving congestion on 24 miles of double track approaching Chicago terminal

By Leroy Wyant

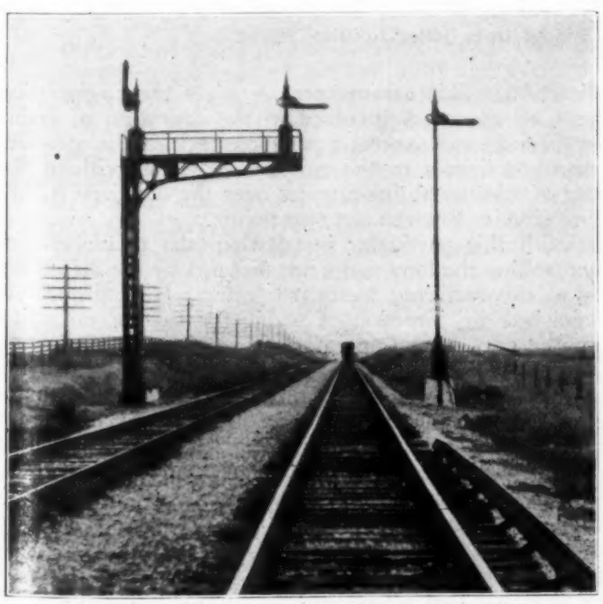
Signal Engineer, Chicago, Rock Island & Pacific

Eastbound Home Signal at Mokena

THE Chicago, Rock Island & Pacific has recently completed east-bound signaling and train control on 24 miles of the westbound track of the double-track main line from Blue Island, Ill., to Joliet. The purpose of this new installation is to permit the use of both tracks for eastbound traffic during the morning rush hours. However, the operation has proved so successful that this method is also used frequently to advantage for similar movements throughout the day.

The 24 miles of double track between Joliet and the Burr Oak freight yards at Blue Island, handles the heaviest traffic of any section of the system. The daily passenger traffic each way includes 13 through trains and 10 suburban trains that terminate at Joliet in addition to 3 trains that run out between Chicago and Oak Forest. The freight traffic includes about 15 trains each way daily, a total average daily traffic of 82 trains.

The most serious operating problem arises in handling the inbound traffic from Joliet to Blue Island in the morning. Merchandise trains are scheduled for specified deliveries while stock trains are required to make the market. On account of a grade of 0.63 per cent opposing eastbound trains from Joliet to Mokena, tonnage freights require from one hour to an hour and 15 minutes to go up the hill. Therefore, if a freight train is not ready to depart more than an hour ahead of a through passenger train, the freight has been held at Joliet. As a result freight trains were frequently delayed at Joliet and west thereof until the morning fleet of eastbound through and suburban passenger trains had passed.



Typical Intermediate Automatic Signals

Prior to the installation of automatic train control in 1923, this situation had been relieved somewhat by operating eastbound freight trains on the westbound track with train orders. However, after the train control was installed supplementing the automatic signals that had been in service for some years, it was not considered good practice to run trains against the current of traffic without train control protection, in view of the fact that such protection was in service in the normal direction and this practice was discontinued. It was evident that the solution of the traffic problem was to return to the use of the westbound track which was not busy during the eastbound rush hours.

In order to accomplish this safely, the westbound track has been equipped with automatic signals and automatic train control for eastbound movements so that this track is now signaled for both directions, using a modified absolute permissive block system, the direction in which traffic is to move being established by manually operated circuit controllers handled by three sets of operators. Train movements are thereby directed by signal indication without written train orders except in case of accident, requiring special movements.

The Limits and Layout of Each Zone

A new freight yard has just been completed east of the Elgin, Joliet & Eastern crossing at Joliet and the first block of the new system extends from the eastbound home signal for the E. J. & E. interlocking plant east to the east end of the new yard. This is marked Zone No. 1 on the sketch.

Mokena is located at the top of the 10-mile hill, which starts at Joliet. From Mokena east the grade descends at varying rates to Blue Island, the maximum rate being about 0.63 per cent. Logically, therefore, the next block, marked Zone No. 2, extends from the

east end of the Zone No. 1 to Mokena, at which point the track layout was revised to permit simultaneous parallel movements, eastbound from the westbound to the eastbound track, and westbound from the westbound track into the passing track. A mechanical interlocking plant was installed to operate the crossover switches and the head-in switches of both the eastbound and westbound passing tracks. Spring switches were provided at the leaving ends of the two sidings.

With this equipment, a train coming up grade towards Mokena from either direction can be diverted into a passing track without stopping to throw a switch, and can be brought to a stop on the siding with the greater portion over the hill. It can be started easily when ready to go, and on account of the spring switch, it is not required to stop to handle the switch. In order to permit switching movements in the Mokena layout without tying up the blocks on each side, the layout between the outer signals, beyond the far end of the passing sidings, is designated as the Mokena block, (Marked Zone No. 3).

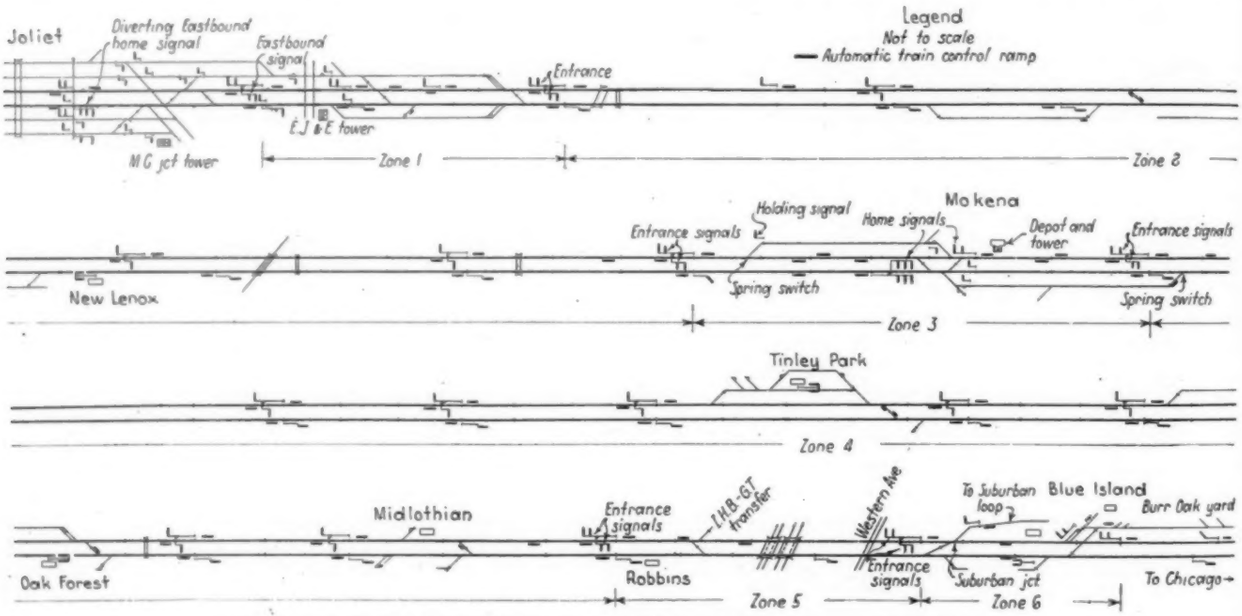
The next zone east, marked No. 4 on the sketch, extends from the east end of Mokena 13 miles to Robbins, where a crossover and a connection with the yards of the Grand Trunk and the Indiana Harbor Belt are provided transfer movements being made frequently between this point and Burr Oak yard at Blue Island. In order to afford protection for such movement, in the new system for either-direction operation on the westbound track, a separate block, marked Zone No. 5, extends from a point just west of Robbins to the starting or "entrance" signal at Western avenue, just west of the suburban line junction near Blue Island.

Many of the suburban trains are diverted from the main line to the suburban loop at this crossover and junction. In addition, switching movements are made from the freight yard to the main line. In order to avoid having such movements tie up the line all the way to Robbins, a separate block, marked Zone No. 6, extends from the Western avenue signal to the termination of the new system at the main line and yard lead junction signals.

In brief, therefore, the system consists of: First, an eastbound track signaled for regular eastbound movements only; and second, a westbound track signaled for either-direction operation, the 24 miles being divided into six blocks or zones.

Unique Traffic-Direction Control

Ordinary polarized relays, controlled by pole changing lever controllers located in the tower and offices at the three points of operation, are used to set up the traffic direction of signals in various zones, each zone being operated as an independent unit. With the short zones, where the control circuits for opposing signals pass a common point, one polarized relay is used with its controlling lever located at the nearest tower or office. With the long zones, such as Zone No. 2, extending 10 miles, one polar relay is located at each end with its controlling lever located at the tower or office nearest that end. These two polar relays must be in co-ordinated positions to clear the signals in either direction. This arrangement requires the co-operation of both operators involved in the operation of trains in the zone and assures a positive check on the opposing entrance signals to the single-track zone, without the use of additional line circuits over the ordinary A.P.B. line circuits between the two points.



Track and Signal Plan Showing Zone Limits from Joliet to Blue Island

With this particular installation, the two operators controlling the long zones are directed by the dispatcher as to eastward and westward traffic. Having once established the direction of traffic for a zone, no action on the part of the operators is required for following moves, which can be made with spacings equal to the normal automatic block signal length. In order to reverse traffic, the traffic direction levers at both ends must be reversed and the polarized relay controlling the entrance signals must correspondingly reverse. The same automatic signal protection is afforded, therefore, as on single track with absolute stop signals for head-on moves and permissive indications for following moves.

It is felt that the peculiar co-ordination of the eastward and westward control circuits and the polarized direction traffic relays which is required, makes the signal system safe and flexible, and this, supplemented

by automatic train control requiring predetermined speed restrictions through stop and caution blocks, constitutes a safe, reliable and flexible system for the operation of trains on single track by signal indication, without written train orders.

In order to distinguish the positive block entrance signals, double arms are used with the lower arm inoperative in some instances and operative in others. In the short zones, where no intermediate signals are used, a clock-work time release is used to provide a predetermined time of about one and one-half minutes before the direction of traffic can be reversed. This time element is used in lieu of the ordinary overlap and permits the segregation of the operation of one zone from the operation of the adjacent zone.

How Trains Are Handled

Levermen were in service previously at the Michigan Central interlocking at Joliet, where the new system starts. Therefore, no change was required in employees there as these levermen control Zone No. 1 and co-operate with Mokena in the control of Zone No. 2. At Mokena, operators were being used on the first and second tricks and an additional man was required for the operation of the new system for the third trick. These operators control Zone No. 3 and co-operate with Joliet in the control of Zone No. 2 and with Blue Island in control of Zone No. 4. At Blue Island the three switchtenders previously in service, control Zones No. 5 and No. 6 and co-operate with Mokena in the control of Zone No. 4.

The new system can be used in several ways, depending on the lineup of trains. Providing no westbound trains are to be run for a period of about one hour and a half an eastbound freight, approaching Joliet a short time ahead of a passenger train, is diverted to the westbound track at M. C. tower, Joliet, and runs all the way to Burr Oak yard, Blue Island, on this track.

In case westbound trains are due and conditions are such that the westbound track can be used for eastbound moves between Joliet and Mokena for a period of only 45 min. or an hour, the method of operating the new system is changed and eastbound freights are sent out of Joliet on the eastbound track while passenger trains are crossed over at Joliet and proceed up the hill on the westbound track to Mokena, thus running around the freights. At Mokena the passenger trains are then crossed over to the normal eastbound track, leaving the westbound track from Mokena to Joliet for the use of any westbound trains that may have been proceeding from Blue Island to Mokena in in the meantime. Various other combinations can be worked out to keep all trains moving.

The new system has been in service from Joliet to Mokena since the first part of October and from Mokena to Blue Island since the first part of December and is working out satisfactorily. The installation complete, including added telephone dispatching facilities, the 13-lever mechanical interlocking plant, automatic block signals, automatic train control and track changes, the latter including the relocation of several switches, the addition of one crossover and the extension of one passing track, cost approximately $85,000. The system has not been in operation sufficiently long to obtain accurate data as to the savings which are being made, but estimates made from time to time have indicated that they will amply justify the installation.

Hearings on Consolidation Bill

WASHINGTON, D. C.

ALFRED P. Thom, general counsel of the Association of Railway Executives, in continuing his testimony on February 7 before the House committee on interstate and foreign commerce on the Parker railway unification bill, told the committee that Congress might as well pass no legislation on the subject as to include in it the provision in the pending bill which would limit the capitalization of a consolidated company to the amount of the commission's aggregate valuation of the properties. Such a provision is included in the Parker bill as paragraph 3 of section 207. Mr. Thom said he assumed that if the legislation is passed it will be because Congress believes that railway unification would be in the public interest but that the limitation of capitalization proposed would create an "insurmountable obstacle" because it would import into the consolidation policy the problem of railway valuation which up to now has been insoluble. A carrier proposing a consolidation would be required to accept the commission's valuation as a basis for the securities to be issued or the whole process would have to await the settlement of the valuation question and the completion of valuations. Many companies, he said, would prefer to stay where they are.

In place of this provision Mr. Thom suggested one under which the commission would be authorized to pass upon the amount of the securities to be issued under the terms of section 20a, under which it now regulates the issuance of securities. Under this, he said, the commission undoubtedly considers whether it believes that the securities would be in excess of the value and would probably veto an issue which it thought would make the securities exceed the value, but it is not required to withhold its approval until it has completed a valuation. With the standard of section 20a in the law, he contended, the public would have the same protection as now and he reminded the committee that rates are based on valuation rather than the amount of securities anyway, whereas to require a consolidation to await a valuation would cause interminable delay.

Mr. Thom said as a primary proposition, or if we were to start anew, he would say that it would be a proper situation if the capitalization did not exceed the value of the properties, but that a different question is presented when applied to securities that have been outstanding for years. Representative Burtness asked how a stockholder would be hurt if asked to accept a smaller amount of par value in securities in exchange for his old securities if he received an equivalent in value, but Mr. Thom said that investors are inclined to be hopeful that their stock will eventually become worth more and that they are unwilling to accept a government valuation of their share in place of the possible market valuation.

When Representative Hoch, of Kansas, asked if the present consolidation law does not contain a provision similar to that of the bill relating to capitalization Mr. Thom replied in the affirmative but he added that there has never been a consolidation under the present law and that there never will be one under it. Mr. Hoch also asked if the commission should not have some supervisory power over the outstanding securities. Mr. Thom said it could disapprove a plan because of the amount of securities involved but that it could not require investors to surrender their stock except by condemnation. It would take a very broad idea of the

public interest, he said, to justify such an assault on the financial structure. In reply to a suggestion by Representative Nelson, of Maine, that the new capitalization be limited to the total outstanding securities of companies to be merged, Mr. Thom said he had considered that but that there are many companies that are notoriously undercapitalized and would object to such a restriction.

Mr. Thom told the committee that there is a great deal of difference of opinion even among railway lawyers as to the proper standard of value. "I do not believe, personally," he said, "that value can be determined alone by cost of reproduction. As I said to one of the railroad presidents, I can build a railroad, with money enough, on top of the Rocky Mountains, that would cost more than one in some other location, but it would not be worth anything. Your value is dependent upon your location and what use you can make of your property. Therefore, I cannot see that value is determined by what it costs to reproduce a property at present times, although that is one of the factors to be considered. However, the Supreme Court has got to pass on the whole question, and if consolidation is desirable, the whole process ought not to be held up until it is decided and the valuations are completed in accordance with the decision."

Mr. Thom was also before the committee on February 1, 2 and 3, explaining various features of the bill and answering members of the committee. Mr. Thom said that one reason for the need for new legislation was the possibility of varying interpretations in paragraph 2 of section 5 of the present law. He said he remembered clearly that the late Senator Cummins, the author of that part of the law, had always taken the position that this paragraph was merely intended as an ad interim provision, and had expressed some apprehension because it was apparently being used as an alternative method for acquiring control of one road by another without actual unification. "You will observe", Mr. Thom said, "that the commission itself is now very reluctant to exercise its power under that section in important cases."

Wilbur La Roe, Jr., representing the Port of New York Authority, repeated before the committee on February 3 his statement before the Senate committee, urging that specific provision be made in the bill authorizing the commission to include or exclude terminal properties from a unification plan or to require common or joint use of terminal properties. Mr. Thom said he thought the language of the bill that the commission may authorize a unification "upon such terms, conditions and methods as it may prescribe as necessary in the public interest", is broad enough to cover everything, but Mr. La Roe insisted on specific reference to terminal properties.

W. Dougherty, vice-president and national legislative representative of the Brotherhood of Railroad Trainmen, submitted to the committee a resolution adopted by the directors of the brotherhood, asking that Congress, in its consideration of consolidation legislation, make provision that the railways shall be consolidated in such a manner as to safeguard to the greatest extent the seniority, contractual and other rights of the employees.

Mr. Thom concluded his statement before the committee on February 8, suggesting an amendment to the bill to provide that its provisions "shall not be held to prohibit, in the exercise of any power conferred by state authority and in accordance with state law (a) the formation of a subsidiary corporation, and the acquisition of all or any part of the securities thereof, for the construction, use, ownership, or control of branches, terminals, or other property to be used as a part of such branch or terminal facilities, or (b) the acquisition by any carrier of securities issued by another carrier, if not forbidden by the antitrust laws of the United States; provided that, if control be thus acquired, it shall not be exercised until the fact of such control is reported to the Interstate Commerce Commission and it has, by order, approved the acquisition of such securities."

Ben B. Cain, vice-president and general counsel of the American Short Line Railroad Association, testified in support of the bill on February 8, saying that the short lines are in general accord with the Association of Railway Executives on the bill, and that while it does not include all they might ask it represents all they think they can expect at this time, with a few minor changes he would suggest. He said his primary purpose was to emphasize the situation in which the short lines find themselves under present conditions and the importance of considering the entire transportation system of the country, so that adequate provision may be made for the inclusion of short and weak lines in stronger systems so that those essential to their communities may be preserved. Section 207 of the bill, he said, does this by providing that the commission may decline to approve a consolidation plan which does not make proper provision for the short lines in the territory involved. While it does not give the commission direct power to require them to be taken over it authorizes the commission to attach conditions to any order it may issue, approving a plan submitted to it on application, which would require the inclusion of the short lines it thinks should be included as a condition precedent.

Representative Hoch asked if it was the theory that shippers located on strong lines should pay rates high enough not only to support these lines but also others not so fortunate. Mr. Cain said that in reality the rates are paid not by the shippers on the strong line but by the consumers generally. Representative Nelson asked by the recapture clause is not an inducement to strong lines to take over weak lines instead of paying half their excess earnings to the government. Mr. Cain replied that the answer of the trunk lines is that there may not be any excess when their valuations are finally established.

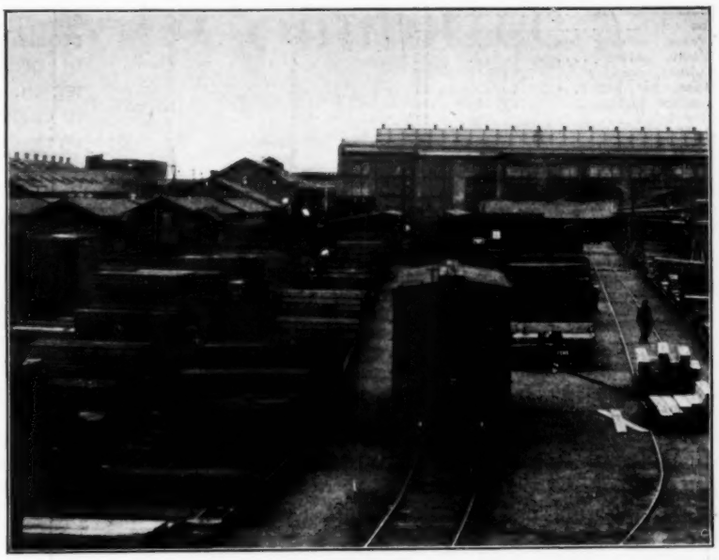
One of the primary purposes of Congress in passing the Transportation Act, he said, was to take care of the weak lines, but the strong lines so far, in applying to the commission for authority to acquire control of others, have generally failed to make provision for the connecting short lines. He thought, however, that they would be willing to accept such lines as the commission would allocate to them and pointed out that many short lines have been acquired under the present law.

Since the law was passed, he said, the commission has issued 296 certificates authorizing the abandonment of 5,217 miles of line, and he was not advocating the retention of lines that are not useful to their communities, but he said that automotive transportation is not an adequate substitute for a railroad and that many communities would suffer if the lines on which they are now dependent are not preserved by inclusion in a stronger system.

THE PHOENIX MUTUAL LIFE INSURANCE COMPANY of Hartford, Conn., announces that because of the reduction in the number of American railroad employees killed and injured within the past ten years, the cost to railroad employees of life insurance has been reduced. A revised schedule, which has just been issued, shows for such employees reductions in the "extra premium" charges.

The Railways and Hand to Mouth Buying

Studies of last year's purchases throw light on extent to which practice is followed by carriers



Lumber is Bought on Open Market in Car Lots

DURING and immediately after the war when business was booming and prices soaring, producers and consumers in all lines of enterprise, not excepting the railways, bought heavily. Then the tables turned. Business fell off precipitously and so did prices, while transportation service improved. It was urgent to reduce inventories and folly to acquire more. Where wholesalers had been buying by the carload, they resorted to the hundredweight. Retailers got down to the dozen and ever since, business analysts, bankers, merchants, railway presidents, and even doctors, dentists and blacksmiths have been talking about hand to mouth buying.

An interesting side light on the railway purchasing of last year, in view of the prominence which hand to mouth buying enjoys, is found in the large volume of contract and carload buying of miscellaneous materials. Within the past year, a purchasing head of one of the large roads came out strongly for hand to mouth buying. Yet in 37 lines of purchasing out of 58 considered, excluding such supplies as coal, rail and cross-ties, this road's buying last year was done under term agreements or contracts. With the exception of one road which did no contract buying of these commodities, the road ranking lowest in a list of 12 roads, with 70,000 miles of line, for which figures are available, bought under contracts in 12 out of 38 lines of supplies considered. Figures for the next lowest roads show contract buying in 17 lines out of 50 and 20 out of 61 respectively. The percentage of contract buying on the other 8 roads (Table I) exceeded 50 per cent in the classes of purchases considered and reached as high as 75 per cent on one road which bought under contract 43 out of the 58 different materials considered. In the aggregate, there were 320 cases out of 661 studied where the buying was done on a contract basis.

Table 1. Analysis of Miscellaneous Purchases by Class I Roads

Road	Number of different materials reported	Number of materials purchased under contract
A	58	37
B	59	32
C	58	43
D	59	32
E	54	31
F	56	31
G	58	33
H	57	37
I	61	20
J	38	12
K	50	17
L	56	0

The different purchases are compared in Table II. Term agreements particularly featured the negotiations for materials used by the mechanical department with 9 out of 12 roads buying machine bolts in this manner, 8 out of 12 boiler tubes, 6 out of 10 bar iron, 9 out of 11 tool steel, 5 out of 12 boiler steel and 7 out of 11 black iron. Pig iron was bought on the open market but 10 of the 12 roads bought malleable and steel castings under contracts while all of the 8 roads reporting on grey iron conducted the transactions under contract. In almost every instance, brake shoes for both locomotives and cars, also couplers, tires and wheels, were covered by term contracts; while contract buying was cited by 8 of the 11 roads for car axles, 7 out of 12 for locomotive axles, and 7 out of 11 for iron pipe. There was contract buying in about 48 per cent of the materials considered.

Table II. Representative Materials Purchased in 1927

Item	Total roads reporting purchases	Roads purchasing on term contracts	Roads purchasing on car load basis
TRACK AND BUILDING MATERIALS			
Track bolts	12	5	10
Track spikes	12	5	11
Wire nails	12	10	7
Tie plates, steel	12	3	11
Structural steel, fabricated	10	2	6
Structural steel, angles	11	6	6
Track shovels	12	4	1
Track chisels	11	7	0
Wire fence	12	6	6
Bond wire	10	2	0
Pipe, cast iron	12	0	5
Pipe, vitrified clay	9	2	2
Kerosene	12	6	6
Rope, manila	12	2	0
Rope, wire	10	7	0
Creosote oil	6	2	6
Cement	12	2	9
CAR AND LOCOMOTIVE MATERIALS			
Bolts, machine	12	9	5
Boiler tubes	12	8	6
Iron, pig	6	0	4
Iron, common bar	10	6	6
Steel, high speed tool	11	9	1
Steel, spring	11	7	4
Steel, boiler	12	5	7
Steel, black No. 28	11	7	6
Castings, malleable, 7 to 15 lb.	12	10	2
Castings, steel, 25 to 50 lb.	12	10	4
Castings, grey iron	8	8	4
Brake shoes, locomotive	11	10	8
Brake shoes, freight	12	11	9
Couplers	12	10	11
Tires, locomotive	12	10	10
Wheels, cast car	11	10	9
Axles	11	8	8
Axles, locomotive driving	12	7	7
OTHER MATERIALS			
Pipe, black steel	11	7	3
Pig lead	11	1	0
Copper, soft sheet	11	1	0
Copper, tubing	12	0	0

	Total roads reporting purchases	Roads purchasing on term contracts	Roads purchasing on car load basis
Copper, wire	11	2	1
Copper, wire, weatherproof	9	1	0
Journal bearings	10	5	4
Car oil	12	10	10
Grease, driving box	11	9	6
Waste, cotton	12	7	7
Rubber, packing	10	3	0
Hose, air brake	11	6	1
Leather belting	11	7	0
Fire brick	11	3	9
Boiler lagging	12	8	3
Lime, hydrated	10	4	7
Soda ash	9	6	6
White lead in oil	12	5	1
Linseed oil, boiled	12	0	1
Glass	12	5	0
Oxygen	12	8	3
FOREST PRODUCTS			
Fir, bridge stringers	9	0	6
Fir, boards	8	0	8
Fir, car sills	8	0	7
Pine, boards	7	0	5
Fuel oil	12	6	11
Total	661	320	296
Per cent	100	48	44

Buy Lumber by Carload

The extent to which materials were bought on the carload basis was also large, having been done in 44 per cent of all the items and roads. Track bolts, spikes, nails and tie plates were bought almost entirely on the carload basis. This was also true of brake shoes, couplers, wheels, fuel oils, creosote and cement. The prices paid were on the carload basis on 6 of 12 roads for manila rope, and for boiler tubes, on 6 out of 10 for bar iron, on 4 out of 11 roads for tool steel, on 7 out of 12 roads for boiler steel and on 6 out of 11 for sheet iron. Forest products were largely bought on the carload basis. Of 60 items considered, there were only 11 instances where no roads reported car lot negotiations.

The extent to which hand to mouth buying has been departed from in the foregoing instances is not as great as might be supposed, however. This is because of the relatively one-sided nature of the contract and car-lot agreements now generally in vogue. Though neither advocates nor opponents of hand to mouth buying have as yet reduced their subject to definition, the fundamental behind hand to mouth buying is the purchasing of current requirements on the open market at prices prevailing at the time of purchase. To contract with certain establishments for needs on a quarterly, semi-annual or annual basis or to adopt a carload arrangement for material where the current needs are less, is a restriction on the natural procedure and therefore not strictly hand to mouth buying.

Table III. Samples of Quantities Ordered Under Term Contracts

6	letter cases
9	lubricator parts
28	welding tool parts
10	heating equipment parts
267	jack levers
1,192	dust guards
113	inspirator parts
17	injector parts
3	inspirator parts
84	lubricator parts
1	lubricator part
326	lubricator parts
43	galvanized iron castings
32	galvanized iron castings
2	hose
105	inspirator parts

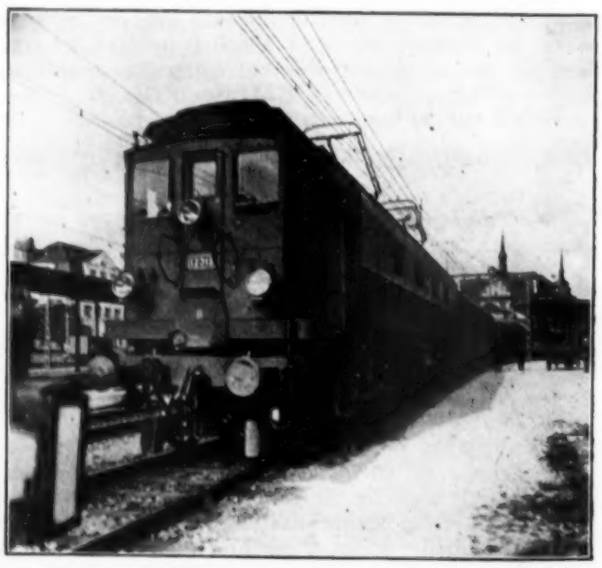
It is well known, however, that, with reference to routine materials, not purchased on predetermined estimates or required for specific programs (material of which the foregoing are representative), the term agreement negotiated, while naming a vendor and price, do not obligate the railroad to purchase beyond current requirements and in many instances are written even to afford the buyer the benefit of any reduction in market price while the agreement is in affect. While term contracts are numerous therefore, the typical form in the present period does not necessarily preclude a procedure of buying which is virtually hand to mouth buying, wherein the railroad orders no more than current requirements. This is illustrated in Table III, a series of orders issued by a railroad under term contracts which, consistent with the policy of limiting all buying to current requirements, specified quantities of small or irregular portions.

It should be said about the car-lot buying, moreover, that while all attempts to purchase in car lots are inconsistent with hand to mouth buying, except where current requirements naturally amount to carloads, there are too many instances where the carload price is allowed for less than carload shipments to support any conclusion that the carload prices are obtained to secure the economies of bulk buying. They rather suggest the vigor of competition which has led vendors to offer carload prices as a consideration for business and the effect is hardly to encourage deviations from hand to mouth methods unless to reduce freight charges.

It is equally apparent that no railroad has been unequivocally reconciled to strict adherence to hand to mouth buying. There is ample evidence within the scope of the reports underlying the survey to suggest much piece-meal ordering of supplies regularly used in large quantities, but only one road among 12 showed a consistent disregard of contract buying and this road subscribed to carload buying of lumber and to certain of the volumetric units in vogue in making other purchases. Thus it appears with reference to railway purchases of the present period that one might safely conclude that hand to mouth buying is not as prevalent as its advocates contend or that it is the ruling procedure of the times and be right in either case.

RECKLESS AUTOMOBILE DRIVERS in New York City, in the 12 months ending with December last, ran into and damaged 560 lamp-posts, and the officers of the city report that the damages resulting amounted to $17,769. Assuming that the persons responsible for these mishaps were of the same class that figure in railroad records as running into the sides of trains at crossings, the interesting feature of this news item is that which tells us that 60 per cent of the lamp-post cases are to be attributed to over-indulgence in alcohol.

* * *



A Pullman Express Train at Arth-Goldau, Switzerland

Railway Engineers Appear Before Flood Control Committee

Lines protest Jadwin plan which fails to assume cost of roadway construction in floodway areas

A COMMITTEE of railway engineers, representing a dozen railroads whose lines are directly affected by the provisions of the Jadwin plan for flood control of the Mississippi river and half a dozen other railroads which are interested in the plan, appeared before the Committee on Flood Control of the House of Representatives at Washington on January 25 and 26 to oppose the adoption by Congress of any plan which does not provide that the cost of roadway changes and other physical changes shall be paid by the Federal government. At the same time, A. F. Blaess, chief engineer of the Illinois Central and chairman of the railroads' committee, presented a report to the House committee in which it is estimated that the changes necessary to conform to the Jadwin plan on 12 railroads will involve an expenditure of more than $71,835,000.

The report of the committee of railway engineers divides the total cost of changes among 11 railroads as follows:

Arkansas & Memphis Ry. Bridge and Terminal Company	$40,000
Chicago, Rock Island & Pacific	4,600,000
Illinois Central System	16,400,000
Louisiana & Arkansas	3,500,000
Louisiana Railway & Navigation Co.	8,502,000
Missouri Pacific	17,100,000
Mobile & Ohio	556,000
New Orleans, Texas & Mexico	5,700,000
Southern Pacific Lines	5,000,000
St. Louis-San Francisco	309,000
Texas & Pacific	10,128,000
	$71,835,000

In addition Hadley Baldwin, chief engineer of the Cleveland, Cincinnati, Chicago & St. Louis, pointed out at the House committee hearing that it would cost about $400,000 to place the Big Four out of danger from Ohio river backwater at Cairo, Ill. In each railroad's estimate no provision was made for increased maintenance charges due to the creation of high embankments and the construction of floodway openings, although representatives of the Texas & Pacific and the Missouri Pacific estimated at the hearings that this would reach about $100,000 and $500,000 per year respectively for those railways.

Membership of Railroads' Committee

The railroads' committee was made up of: A. F. Blaess, chairman; Hadley Baldwin; R. W. Barnes, chief engineer, S. P.; E. A. Hadley, chief engineer, M. P.; W. S. Hanley, chief engineer, St. L. S. W.; F. G. Jonah, assistant to president and chief engineer, St. L.-S. F.; C. S. Kirkpatrick, chief engineer, G. C. L.; C. R. Mee, chief engineer, L. R. & N.; E. F. Mitchell, chief engineer, T. & P.; C. A. Morse, chief engineer, C., R. I. & P.; E. F. Salisbury, chief engineer, L. & A.; B. A. Wood, chief engineer, M. & O.; and C. R. Knowles, superintendent of water service, I. C., secretary.

Mr. Blaess pointed out to the House Committee that the report was not presented as a criticism in the sense of obstructing or interfering with the work of developing plans for flood control, but was intended to outline as definitely as possible the effect of the proposed plan upon the railroads. He placed the railroads on record as willing and anxious to co-operate to the extent of their ability with Congress and all authorized agencies in the development of a method of solving the problem of river control in the Mississippi Valley—a problem which was compared in magnitude by Dwight F. Davis, secretary of war, to the construction of the Panama canal. Mr. Blaess represented the Jadwin plan as an advance over any scheme yet evolved, but showed that it lacks so much of being complete in engineering detail that it is not possible to develop definitely what effect its execution will have on the railroads located in the affected territory.

"The estimate of $296,400,000 is misleading," the committee's report states, "because it does not include any of the expense incident to the purchase of rights-of-way for floodways; for damages to property; for the rearrangement of interior drainage; expenses incurred by the railroads in raising and relocating their tracks and providing additional and larger waterways; raising and relocating public highways; clearing floodways; and damages to telephone and telegraph lines and other structures. It would seem that, regardless of how the total cost to carry out the project is ultimately divided, the estimated cost should include all expenses necessary to complete the work. It is undoubtedly true that land values and flowage rights could not be arrived at accurately, but they could and should be estimated and included in the total cost of the project. The amount to be assumed by local interests is shown as $37,440,000. After adding the other amounts, it will be found this figure will be very substantially increased and the costs to be paid by the local interests will be far in excess of 20 per cent of the cost of the flood control works recommended.

"If it is the intention that the individual railroad companies pay for the expense incident to raising their tracks and providing additional openings incident to the executon of this plan, it would not be satisfactory to the railroads affected. These carriers have in past years spent large sums of money raising tracks and adjusting grades to an elevation that would ordinarily take care of floods that could be carried safely within existing levees. All expense to be incurred in raising and relocating tracks and providing additional openings to fit in with the plan proposed by the chief of engineers should be paid by the federal government."

Engineers Question Fuse Plug Levee Plan

The description of the railroad lines located in the proposed floodways and backwater areas is virtually the same as that which appeared in the *Railway Age* of January 28, page 233. Particular attention is called in the report to the operation of the safety or fuse-plug levees which are designed to allow excess water from the Mississippi river to overflow the levees into the Boeuf river floodway at Cypress Creek, between Arkansas City, Ark., and Lake Village, and at the head of the

Atchafalaya river north of Melville, La. The spillway into the Boeuf floodway is proposed to be uncontrolled except by a fuse-plug levee at Cypress Creek although the floodway is to be protected with side levees to prevent the water from spreading over too much territory.

Throughout the portion of the House hearing devoted to the railroads doubt was expressed as to the practicability of maintaining complete control over the water flowing through "fuse-plug" levees. Representative Frank R. Reid, (Ill.), chairman of the House committee, and other committee members asked each railway engineer in turn whether he had ever before heard of "fuse-plug levees." All declared that they first learned of "fuse-plug levees" from the Jadwin plan. Mr. Michell and Mr. Barnes said that when a levee is overtopped it is impossible to forecast the speed with which it will go out and a crevasse will occur, because of the scouring action of the waters. Some of the engineers favored the construction of permanent concrete spillways.

In the Boeuf floodway and the Arkansas river backwater area north of it, Mr. Blaess and Mr. Hadley estimated that it would cost the Yazoo & Mississippi Valley and the Missouri Pacific $3,700,000 and $15,168,000 respectively, to raise their tracks from 3 to 14 ft, above their present level on more than 140 miles of line. In the Atchafalaya floodway it is estimated that the Texas & Pacific, the Southern Pacific, the Gulf Coast Lines (New Orleans, Texas & Mexico) and the Louisiana Railway & Navigation Company must spend about $30,000,000 to protect and raise about 150 miles of their lines. Harry Bortin, consulting engineer of the L. R. & N., testified that his railroad would be required to spend $7,000,000 for raising track—an amount which represents more than one-half of the cost of the entire railroad—and including the cost of a bridge over the Bonnet Carre spillway, it would be necessary to raise rates to provide a return on an additional investment in the property of $8,000,000.

Bonnet Carre Spillway Details

At Bonnet Carre it is proposed to install a controlled spillway 7,500 ft. long, discharging into Lake Pontchartrain through a floodway to be constructed between the main levee and the lake. This floodway is to be approximately 8,000 ft. wide at the spillway and is to widen out to about 15,000 ft. at the lake, the railroad engineers' report shows.

"This floodway would cross a public highway, the Yazoo & Mississippi Valley, the Louisiana Railway & Navigation Company and the Illinois Central," the railroads' report continues. "It would be necessary to raise the tracks and provide sufficient openings in order to pass a discharge of at least 250,000 sec. ft. safely. There are no detail plans from which it can be developed what the actual requirements will be where this floodway is to cross the railroads and highway.

"The plan of the Spillway Board contemplated excavating four channels, each 600 ft. wide, 20 ft. deep and 5,200 ft. long, to take care of the water to pass under the Illinois Central tracks, these channels to be bridged. The bottom of these channels would be considerably below the level of Lake Pontchartrain. It is our judgment, that the openings proposed by the army engineers are not sufficient, and to permit unobstructed flow of water and prevent scouring or washing out of tracks might make it necessary to bridge the entire distance between th side levees of the floodway, where it crosses the Illinois Central tracks.

"General Jadwin's report states that the discharge from this spillway will raise the level of the water in Lake Pontchartrain about 2 ft. and that this is much less than the height to which the level of the lake is often raised by the storm winds in the Summer and Fall. It is true that the storm winds raise the lake level 2 ft., and at times considerably more, but if we should have a storm that would raise the level 2 ft. or more at the same time the spillway is discharging water into the lake, the result would be disastrous, and it might make it necessary to raise the main line tracks of the Illinois Central along the lake or construct some type of protective works beyond the limits of the raise required to take care of the spillway during such periods and prevent interruption of traffic.

"The estimates shown in General Jadwin's report do not include the money to take care of the expense of raising and providing openings to take care of the Bonnet Carre spillway. To raise these tracks and provide the necessary openings will create grades in excess of what they now are and will result in no benefit to the railroads from an operating or maintenance standpoint, but to the contrary, will result in increased expense due to the high approach fills and additional bridging that will have to be maintained. Presumably this expense is to be taken care of by the states or local interests, but no good reason is advanced why this should be done.

"The entire expense of taking care of the railroads at this and all other points where expenditures must be incurred to adjust their tracks to fit in with the comprehensive plan recommended by General Jadwin, should be assumed by the federal government."

Plan Creates Higher Stage at Cairo

Mr. Blaess, speaking as chairman of the railroads' committee, on January 25 pointed out that the Jadwin plan contemplates a maximum stage of 66 ft. at the junction of the Ohio and Mississippi rivers at Cairo if the flood waters are confined within the present levees. Setting back the levees on the west side of the Mississippi between Bird's Point, Mo., and New Madrid is expected to reduce the stage at Cairo to 60 ft.—an elevation 3.7 ft. higher than the previous high stage of 56.3 ft. in 1927.

With this situation confronting the Big Four Mr. Baldwin declared that there is no economic justification for an expenditure to raise that railroad's line into Cairo. "We could better abandon the line for the time of the flood and come back after the water has subsided," he continued. "But there is the question of protecting Cairo and having a line into Cairo to haul supplies for the maintenance of levees and for the removal of people in case of levee failures. It is a question $400,000 to be spent on the grounds of humanity."

Other Testimony

J. L. Lancaster, president of the Texas & Pacific, declared the Jadwin plan to be "unfair treatment when no provision has been made to defray railroad expenses."

H. M. Lull, executive vice-president of the Texas and Louisiana lines of the Southern Pacific, said that the railroads should not be required to meet the cost of artificially imposed conditions. Others who testified before the House Committee, explaining in detail the manner in which their properties would be affected by the Jadwin plan were: R. W. Barnes, chief engineer of the Southern Pacific; R. H. Ford, assistant chief engineer of the Rock Island, and E. A. Hadley, chief engineer of the Missouri Pacific.

Class I Roads Earned 4.4 Per Cent in 1927

WASHINGTON, D. C.

THE 183 Class I railroads in 1927 had a net railway operating income of $1,085,485,000 which was a return of 4.40 per cent on their property investment, according to reports filed by the carrier with the Bureau of Railway Economics. The net railway operating income in 1926 was $1,233,048,000 or 5.13 per cent on the property investment.

Operating revenues in 1927 amounted to $6,206,986,000, as compared with $6,465,342,000 in 1926 or a decrease of 4 per cent. Operating expenses totaled $4,626,932,000, as compared with $4,728,540,000 in 1926, or a decrease of 2.1 per cent.

Class I railroads in 1927 paid $380,638,000 in taxes, a decrease of $14,564,000 or 3.7 per cent under the total for 1926.

Fifteen Class I railroads operated at a loss in 1927, of which seven were in the Eastern district, two in the Southern and six in the Western district.

The net railway operating income by districts in 1927 with the percentage of return based on property investment, was as follows:

New England Region	$ 39,665,000	4.40 per cent
Great Lakes Region	187,904,000	4.50
Central Eastern Region	232,024,000	4.59
Pocahontas Region	81,821,000	8.07
Total Eastern District	541,414,000	4.86
Total Southern District	136,189,000	4.33
Northwestern Region	117,658,000	3.40
Centralwestern Region	199,862,000	4.28
Southwestern Region	90,362,000	3.98
Total Western District	407,882,000	3.92
UNITED STATES	1,085,485,000	4.40 per cent

The rate of return on property investment for the five years ending with 1927 has averaged 4.64 per cent per year.

For the month of December, the net railway operating income of the Class I railroads amounted to $55,476,000, which was at the annual rate of return of only 2.68 per cent. In December, 1926, the net railway operating income was $80,175,000, or 3.98 per cent.

Operating revenues for December amounted to $467,559,000, as compared with $527,740,000 in December, 1926, or a decrease of 11.4 per cent. Operating expenses totaled $377,612,000, compared with $408,833,000 in the same month the year before, or a decrease of 7.6 per cent.

Eastern District

The net railway operating income for the Class I railroads in the Eastern district in 1927 totaled $541,414,000, which was at the rate of 4.86 per cent. In 1926, the net was $615,719,000, or 5.68 per cent. Operating revenues of the Eastern railroads in 1927 totaled $3,082,445,000, a decrease of 4.9 per cent, while operating expenses totaled $2,312,176,000, a decrease of 3.2 per cent.

Class I railroads in the Eastern district for December had a net of $23,684,000, as compared with $36,705,000 in December, 1926.

Southern District

Class I railroads in the Southern district for the year had a net railway operating income of $136,189,000 which was at the rate of 4.33 per cent. In 1926, the net railway operating income amounted to $163,205,000, which was a return of 5.47 per cent. Operating revenues amounted to $813,187,000, a decrease of 7.6 per cent, while operating expenses totaled $618,829,000, a decrease of 4.8 per cent.

The net railway operating income of the Class I roads in the Southern district in December amounted to $8,383,000, while in the same month in 1926 it was $12,762,000.

Western District

Class I railroads in the Western district in 1927 had a net railway operating income of $407,882,000, or of 3.92 per cent. In 1926, the railroads in that district had a net of $454,125,000, or 4.44 per cent. Operating revenues in the Western district in 1927 amounted to $2,311,353,000, a decrease of 1.4 per cent, while operating expenses totaled $1,695,928,000, an increase of four-tenths of one per cent. For December, the net railway operating income of the Class I railroads in the Western district amounted to $23,409,000. The net railway operating income of the same roads in December 1926 totaled $30,708,000.

Class I Railroads—United States

	1927	1926
Month of December		
Total operating revenues	$ 467,559,000	$ 527,740,000
Total operating expenses	377,612,000	408,833,000
Taxes	25,974,000	30,230,000
Net railway operating income	55,476,000	80,175,000
Operating ratio—per cent	80.76	77.47
Rate of return on property investment	2.68%	3.98%
Twelve months ended December 31		
Total operating revenues	$6,206,986,000	$6,465,342,000
Total operating expenses	4,626,932,000	4,728,540,000
Taxes	380,638,000	395,203,000
Net railway operating income	1,085,485,000	1,233,048,000
Operating ratio—per cent	74.54	73.14
Rate of return on property investment	4.40%	5.13%

Southeastern Enginemen Get 6½ Per Cent Increase

WASHINGTON, D. C.

AN increase of 6½ per cent in wages in all classes of service, retroactive to September 1, 1927, was awarded the locomotive enginemen on the 15 principal southeastern railways in a decision reached on February 4 by the board of arbitration which has been holding hearings on the request of the Brotherhood of Locomotive Engineers for a general increase of 15 per cent in addition to certain increases for three-cylinder, electric and Mallet locomotives and locomotives of over 275,000 pounds on drivers. The award was signed by only four members of the board, W. P. Stacy and Leslie M. Shaw, the neutral members, and J. J. Pelley and W. J. Jenks, the members selected by the railroads, but not by A. Johnson and S. H. Huff, selected by the brotherhood. The hearings were held from January 3 to 23 after which oral argument was heard on January 23, 24, 27 and February 2. The text of the award follows:

First: With respect to the request for a general increase of wages for the Engineers in the employ of the designated Railroad Companies, parties hereto, over the existing scale of wages in all branches of the service, it is the opinion and judgment of a majority of the Board that a general increase of six and one-half (6½%) per cent should be allowed, based on the present scale of wages in all classes of the service; and such increase is accordingly awarded.

Second: The request that Mallet rates be applied to Three Cylinder steam and electric locomotives is disallowed.

Third: The request that there be added on the Mallet engines and engines carrying Mallet rates of over 275,000 pounds on drivers, in freight service, a differential of twenty-five (25c) cents for each additional 50,000 pounds on drivers and on other engines a differential of twenty-five (25c) cents for each 50,000 pounds over 350,000 pounds on drivers, is not granted.

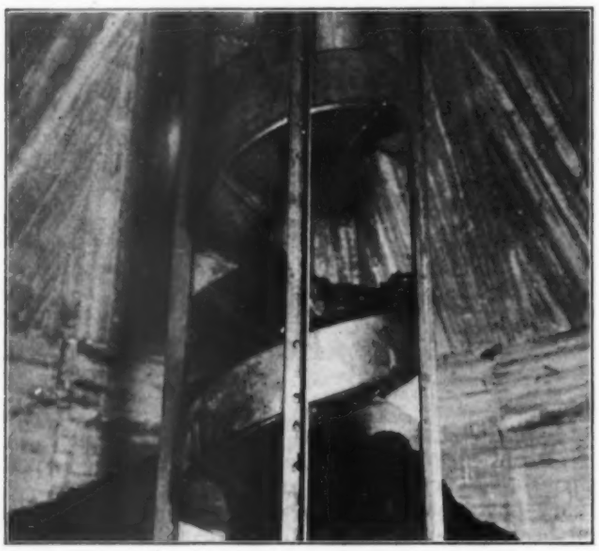
Fourth: With respect to the request that when Boosters are attached to tenders the weight of the tender be added to the weight on drivers, it is adjudged that when a locomotive leaves a terminal with Booster in condition to operate, the weight on

drivers shall be determined by adding the tractive effort of the Booster to the tractive effort of the locomotive, and establish new weight on drivers proportionate to the increased tractive effort.

Example: Locomotive without booster weighs 224,000 pounds on drivers, with tractive effort of 47,500 pounds. Tractive effort equals 21.2% of weight on drivers. Booster adds 10,000 pounds to the tractive effort, making total tractive effort 57,500 pounds. 57,500 pounds is 21.2% of 271,000 pounds, the new weight on drivers.

A Fuel Station for Lignite

WHILE there are large deposits of lignite coal in the United States, notably in Texas and in North Dakota and neighboring states, this coal has never come into general use as a locomotive fuel due to the fact that it is friable, causing it to break up in handling, and also that it is subject to deterioration when exposed to the weather. In Texas, the availability of cheap oil has further discouraged attempts to use this fuel.



Spiral Conveyor Minimizes Breakage and Segregation

Some time ago the International-Great Northern and the Texas & Pacific, both of which are able to secure lignite coal cheaply, began to experiment with this fuel and conducted exhaustive studies and tests which seem to hold promise that it can be used economically and efficiently. In conducting these tests the former road, about 18 months ago, equipped a locomotive for burning lignite, fired through a mechanical stoker, and has since equipped other locomotives similarly. The Texas & Pacific has also had in operation for some time a stoker-fired locomotive using lignite.

Since the I.-G. N. has heretofore used oil exclusively as a locomotive fuel it was not equipped with facilities for the rapid and economical handling of the coal from the cars to the locomotive tender and the methods at hand entailed high costs as well as considerable breakage of the coal. To obviate these disadvantages, a modern coaling station of 300-tons capacity was built at Trinity, Tex., and placed in service recently. This station, of the Simplex skip hoist type, is built of reinforced concrete and serves two tracks. The plant is equipped to prevent breakage of the coal as well as segregation of the large and small sizes as it is delivered to the locomotive.

The coal is unloaded from hopper-bottom cars through a concrete track hopper 20 ft. long, to a 1½-ton skip bucket which hoists the coal to the storage bin at the rate of 50 tons an hour. The bucket is operated by a direct connected automatic reversible hoist, controlled by a Cutler-Hammer automatic push-button limit switch to control the travel of the bucket between the filling and dumping positions. The hoist is also equipped with a special safety switch to prevent overwinding of the hoisting cable and a switch to prevent trouble from slack cable.

The coal is dumped from the hoist bucket into a hopper at the top of the structure, whence it passes into a cast iron spiral lowering chute which permits the coal to slide to place in the bin with a minimum of breakage and segregation. To insure that the coal is delivered to the locomotive without a separation of the coarse and fine particles, the delivery chutes are equipped with side cut "non-skim" gates, opening from the center to the side, which permit the coal to flow as it lies in the bin and prevent the skimming of the larger lumps by the fireman when taking coal.

The coaling station, including the spiral chute and the non-skim gates, was designed by the Roberts & Schaefer Company, Chicago, by whom it was erected under the direction of C. S. Kirkpatrick and F. S. Schwinn, chief engineer and assistant chief engineer, respectively, of the International-Great Northern.

New Coaling Station on I.-G. N. at Trinity, Tex.

STATISTICS of the business (and the capacity) of public warehouses in the United States are to be published monthly by the Bureau of the Census, according to an announcement which has been issued by the Department of Commerce, Washington. It is proposed to summarize the totals of goods (quantity), the value of goods and other data, including comparisons of the percentage of available space that is actually used. Over 500 warehouses have already agreed to send monthly reports to Washington.

Looking Backward

One Hundred Years Ago

The Baltimore & Susquehanna Railroad Company [now part of the Pennsylvania] was chartered on February 13, 1828, to build a railroad from Baltimore, Md., north to the Pennsylvania state line, 25 miles.

Fifty Years Ago

The report of the Western Railroad Association for 1877 contains the following suggestion:

"That careful experiments be made with devices deposited with the Association, as directed by committees appointed at the annual meetings, under the supervision of an impartial mechanical engineer. * * * The opinion of a professional mechanical engineer would be of value in determining the patent status of every device presented but it would hardly be advisable to provide for his services unless experimentation and examination to determine the mechanical merits of devices were also contemplated."—*Railroad Gazette,* February 8, 1878.

In order to care for its second and third class passengers from the West the Erie has arranged a special omnibus transfer, starting from under cover of its Jersey City depot, to carry its passengers and their luggage direct to steamships and hotels, thus affording absolute protection from sharpers.—*Chicago Railway Review,* February 9, 1878.

Twenty-Five Years Ago

The program of the administration for legislation at this session of Congress regulative of trusts and railroads, as outlined by President Roosevelt, includes: (1) establishing a bureau of corporations and public utilities as a branch of the Department of Commerce, (2) a bill prohibiting rebates and secret rate cutting with more effective means for its enforcement and (3) a bill to expedite the settlement of all court cases involving the interpretation of interstate commerce statutes.—*Railway Age,* February 13, 1903.

W. A. McGonagle, heretofore assistant to the president has been elected vice-president of the Duluth, Missabe & Northern, with headquarters at Duluth, Minn.—*Railroad Gazette,* February 14, 1903.

The announcement of the building of a new bridge across the East River at Hell Gate, New York, has been made by the Pennsylvania. It is estimated that the new bridge will cost over $8,000,000 and will have a total length with approaches of two miles.—*Railway and Engineering Review,* February 14, 1903.

Ten Years Ago

In connection with the election of a new president of the Great Northern it has been announced that Ralph Budd, assistant to the president, will become executive vice-president.—*Railway Review,* February 9, 1918.

Representatives of practically all classes of railway employees have either presented requests for higher wages to the Railroad Wage Commission or have asked for a hearing for that purpose. Where a specific wage increase is demanded 40 per cent seems to be a popular figure while other organizations merely ask for higher pay and shorter hours.—*Railway Age,* February 8, 1918.

New Books

American Railway Signaling; Principles and Practices. Three pamphlets, 6 in. x 9 in., illustrated, bound in paper. Published by the Signal Section, American Railway Association, 30 Vesey Street, New York City. Prices as below.

"American Railway Signaling; Principles and Practices" is the title of the elaborate elementary educational hand book which is prepared by the Signal Section of the American Railway Association; and Chapter VI, on direct current relays, which came out some months ago, is now followed by Chapter V on batteries and Chapter X on alternating current relays. Twenty-three of the 26 chapters are yet to be written. The three completed chapters are in three separate pamphlets, the prices of which, prepaid, are: Chapter V, to railroad employees, 20 cents; to other persons 30 cents; Chapter VI, 14 cents and 25 cents; Chapter X, 15 cents and 25 cents. The pamphlet containing Chapter V has 85 pages while Chapter X has 56.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Commerce Yearbook 1926. Vol. II—Foreign Countries and Noncontiguous Territories of the United States, compiled by Bureau of Foreign and Domestic Commerce, U. S. Dept. of Commerce. Besides an outline map of the world and maps of the various continents that are useful for reference, this volume contains in Part IV "Comparative world statistics" miles of line by continents and countries, freight tonnage and passengers carried and ton-miles for 1925, p. 628-629. 642 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. $1.25.

The Growth and Development of the Pennsylvania Railroad Company 1846-1926, by H. W. Schotter, Assistant Treasurer. A review of the charter and annual reports of the Pennsylvania Railroad Company that is an important contribution to both the railroad and the economic history of our country. 518 p. Pub. by the Pennsylvania Railroad Company, Philadelphia, Penna. To employes, $1. To the public through Allen, Lane & Scott Co., Philadelphia, Penna. $2.50.

Periodical Articles

The Changed Character of Corporate Financing in the Last Seven Years, by E. E. Richter. "Until the last two years railroad stock financing has been conspicuous by its absence during the period 1921-1927. This represents a marked change from pre-war conditions." p. 207. Annalist, January 27, 1928, p. 207, 229.

A Proper Basis for Railway Rates: Sophisms in the O'Fallon Case, by Halbert P. Gillette. Annalist, January 27, 1928. p. 205-206.

Railway Rates: British and Foreign, by E. T. Good. Post-war changes and their causes. English Review, January 1928, p. 59-62.

The Railways Act 1921, by A. W. Arthurton. What was hoped for and what has been possible under the provisions of this act. 19th Century and After, January, 1928, p. 43-55.

Some Developments in the Electrical Industry During 1927, by John Liston. Reviews steam railroad electrification, power-stations, Diesel-electric ferries as used by the Southern Pacific, railway signals and train control and yard lighting progress. General Electric Review, January 1928, p. 4-63.

Tempering Freight Rates. Editorial comment on rate agitations which concludes "Is it to be understood as a policy that whenever, in consequence of good management or good fortune, the financial condition of carriers has improved, this is to lead to lower rates for depressed industries in regions served irrespective of the causes of depression?" Saturday Evening Post, February 4, 1928, p. 24.

Odds and Ends of Railroading

A "Silver Spike" Ceremony in Vermont

At one washout on the Central Vermont in the November flood a long trestle was required to restore the track. Pile driving was pushed on both sides of the gap and when the two gangs neared each other a few weeks ago, hasty plans were made to celebrate the meeting of the rails. One foreman secured a tin foil cigar wrapper and with it dressed up a common track spike as a "silver spike." Then with due solemnity this silver spike was used as the last, uniting the construction from the south with that of the north.

Name Locomotives After Famous Regiments

The London Midland & Scottish (England) announces that the first 24 of its locomotives of the "Royal Scot" class, the type that hauls the world's record non-stop train, are to be named after famous British regiments.

The names which have been selected are: Royal Scot, Royal Scots Grey, Black Watch, Royal Scots Fusilier, Scottish Borderer, Cameron Highlander, Gordon Highlander, Argyll & Sutherland Highlander, Seaforth Highlander, Royal Engineer, Grenadier Guardsman, Royal Fusilier, Sherwood Forester, Dragoon Guardsman, Coldstreamer, Scots Guardsman, Irish Guardsman, Welsh Guardsman, Royal Welsh Fusilier, Lancashire Fusilier, Royal Inniskilling Fusilier, H. L. I., Royal Ulster Rifleman, Royal Irish Fusilier.

Tut, Tut—Do Railroad Men Talk Like This?

Willie finally persuaded his aunt to play train with him. He took great delight in arranging the chairs in line, and with an air of knowing his business, began issuing orders.

"Now you be the engineer, Auntie, and I'll be the conductor. Lend me your watch and get into the cab."

Willie then hurried down the platfom, holding the watch in his hand; suddenly turning around, he waved toward the engineer and yelled:

"Pull out there, you red-headed, pop-eyed, pie-faced boob."

"Why, Willie!" exclaimed Auntie in amazement.

"Thats' right, chew the rag," he retorted. "We're five minutes late already. Get the 'ell outa here."

Willie's parents now forbid him playing down by the station and are persuading him to give up railroading.

The "Telegrapher's Fist"

A writer in the Kansas City Southern Bulletin laments the passing of the form of writing known as "the telegrapher's fist." The general use of the typewriter is given as the cause of the disappearance of this form of chirography. There are still a number of officers who write "telegrapher's fist." B. G. Fallis, general superintendent of the Southern at St. Louis, is an example. He never signs his name without putting a small circle instead of a dot over the "i" in his name, which is one of the distinguishing characteristics of the "telegrapher's fist." There are many others who write in this script, indicated by a pleasing contour and a graceful rounding of each letter, with a tendency toward joining the words together. One of the peculiarities of the "telegrapher's fist" was that the handwriting of those who used it was strikingly similar, far more so than could be found in the writing of any other group having the same occupation.

A B. & O. Entry

Not to be outdone in the matter of family service records, the Baltimore & Ohio calls attention to the Sparks family, with a total service record of 128 years. There were five brothers originally and three of their sons are also employed by the B. & O.; James W. Sparks, chief clerk to the superintendent of the Baltimore Terminal division, has 36 years' service to his credit; E. R. Sparks, chief clerk in the engineering department, 38 years; Harris Sparks, secretary to the engineer of bridges, 25 years; and Thomas R. Sparks, inspector, engineering department, 11 years. The fifth brother, Morris C. Sparks, deceased, 18 years' service, was also an inspector in the engineering department. James L. Sparks, stenographer in the freight department, with 10 years' service to his credit, is a son of James W. Sparks. Two sons of Thomas R. Sparks are also in the service, T. C. Sparks, levelman, engineering department, four years, and R. R. Sparks, rodman, engineering department, one year.

Olaf, Four-Leaf Clovers and Horseshoes

In all the city of Rockford, Ill., there is no more respected citizen than Olaf Nanson, mortician. He has conducted the funerals of Rockford's Scandinavian inhabitants for many years with diginity and decorum. The New Year started off with a bang for Olaf, a large and ornate funeral being held on January 3, under his auspices. Driving home in his hearse alone, Olaf was busy thinking about whatever it is that morticians think about, when just as he reached a bridge over the Chicago & Northwestern tracks, the hearse skidded. It crashed through the guard-rail of the bridge, turned completely over and landed right-side up on the tracks. After Olaf's first and natural surprise was over, he found that he was still sitting at the wheel, all in one piece, although slightly jarred. "Yeeminy, I'm lucky," said he. Then he noticed a train bearing down upon him at great speed. He scrambled out of his hearse and barely reached safety before the train whizzed by. He watched the train hit his pet hearse and toss it into the ditch, a complete wreck. As he surveyed the ruins, Olaf remarked again: "Yeeminy, I'm lucky." As it happened, the hearse was fully insured.

IM SURE YOU MUST BE MISTAKEN THEY'VE BEEN IN BED ALL THE TIME
BAD LITTLE PUBLIC UTILITIES
GOOD LITTLE PUBLIC UTILITIES
SHADY FINANCING

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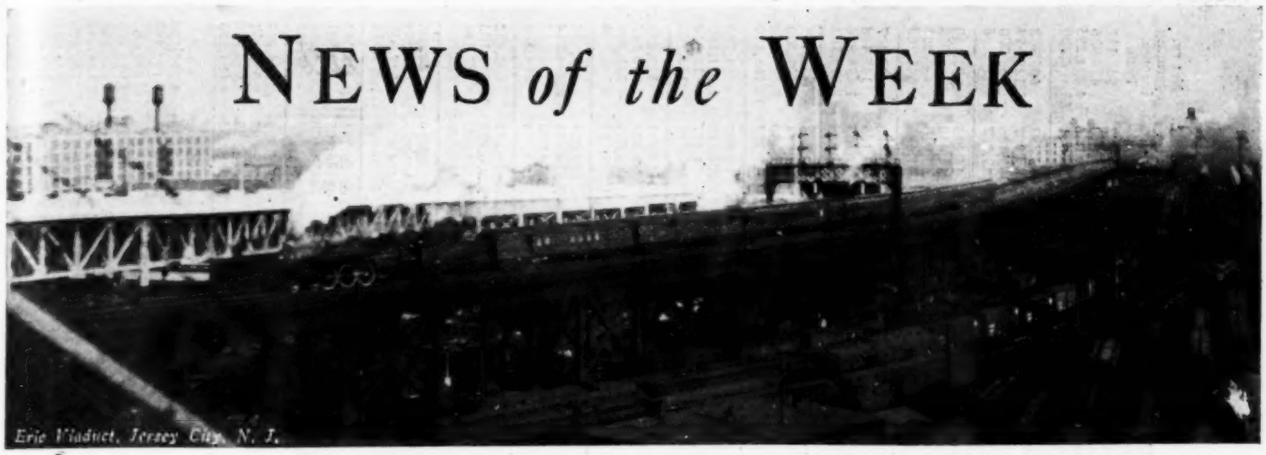
May We Hope That the Railroads Are Meant to Be Included Among the "Good Little Public Utilities?"

NEWS *of the* WEEK



Erie Viaduct, Jersey City, N. J.

THE SEVENTEENTH ANNUAL INTERNATIONAL SAFETY CONGRESS, conducted by the National Safety Council, will be held in New York City, in the week beginning Monday, October 1.

THE INTERSTATE COMMERCE COMMISSION has granted the Chicago & Alton an additional extension of time to **July 1** in which to complete its installation of automatic train control.

WILLIAM T. GUNNISON, chairman of the Public Service Commission of New Hampshire, died at his home in Rochester, N. H., on February 2, at the age of 59.

THE SENATE on February 3 passed the independent offices appropriation bill, carrying appropriations for the Interstate Commerce Commission to the amount of $7,654,745, without change in the amount from the bill as previously passed by the House.

THE WESTERN RAILWAY CLUB will devote its next regular monthly meeting, to be held on Monday evening, February 20, at the Hotel Sherman, Chicago, to the consideration of the subject "Why the Supply Man." The discussion will be led by George E. Haas, Pyle-National Company, Chicago.

THE NEW YORK RAILROAD CLUB will meet at the Engineering Societies building, New York, at 8:15 p.m. on February 17 for a "United States Steel Corporation Night." Motion pictures on the manufacture of steel will be shown and C. C. Cluff, manager of sales, Carnegie Steel Company, will speak.

THE CANADIAN RAILWAY CLUB will hold its next meeting on February 14 at Montreal, when a paper will be read on "Locomotive Boiler Development" by C. A. Brandt, chief engineer, the Superheater Company Ltd., New York.

JUDGE J. C. HUTCHESON of the federal court in Texas, on February 7, recommended the institution of criminal contempt proceedings against the four officers of the Southern Pacific, who, on January 28, were held guilty of openly defying the railway labor act and the injunction of the court; this in promoting a "company union" to act for its clerks instead of the Brotherhood of Railway Clerks. Judge Hutcheson indicated that he would insist upon the restoration of the Brotherhood of Railway Clerks as the representative of the clerical employees of the Southern Pacific in Texas and the dissolution of the company union.

A NOTICE OF APPEAL from the decision of Federal Judge Carpenter unholding the wage increase granted to members of the Brotherhood of Locomotive Firemen and Enginemen by an arbitration board at Denver, Colo., on December 17 was filed by the western railways in the United States Circuit Court of Appeals at Chicago on February 6.

THE ST. LOUIS & O'FALLON filed in the United States District Court at St. Louis on February 8 an appeal to the United States Supreme Court from the decision of November 10 involving the recapture of earnings and the court decision that the issue of confiscation was not involved. The appeal filed by the railroad contains 40 allegations of error.

THE NEW ENGLAND RAILROAD CLUB will hold its regular meeting on Tuesday evening, February 14, at the Copley-Plaza Hotel, Boston, with the usual dinner preceding the meeting. The Diesel engine in railroad traction will be the subject of a paper by D. L. Bacon, supervisor of automotive equipment of the New York, New Haven & Hartford. Mr. Bacon has recently returned from Europe where he has gathered information on the subject to be discussed.

ONE OF THE FASTEST passenger train runs over a distance of 500 miles or more, was made by the Cleveland, Cincinnati, Chicago & St. Louis on January 25 by a special train between St. Louis, Mo., and Cleveland, Ohio, when an average speed of 65.5 miles an hour was made on the 514.7 miles between Granite City, Ill., and Berea, Ohio. Delays for water and changing engines amounted to 14 minutes which, if deducted, gives an average speed of 67.3 miles per hour. The run was made in taking A. H. Harris, vice-president of New York Central lines to Cleveland to catch the Southwestern Limited, so that he could attend the funeral of vice-president Ira A. Place at New York City. The best run for this distance was also made by one of the New York Central lines, the Lakeshore & Michigan Southern: Chicago to Buffalo, June 13, 1905; three cars, 525 miles at 69.53 miles an hour.

MENTION HAS ALREADY been made in these columns of the fact that the express contract committee of the Association of Railway Executives is now circularizing the railroads that are parties to the agreement with the American Railway Express Company to determine whether they favor the use of a railroad owned express company which will mean the purchase of the American Railway Express Company or the organization of a new company to handle the express business at the close of the present contracts in February, 1929. No action relative to the purchase is contemplated until a substantial majority of all the roads has expressed an opinion. At present, no date has been set before which the roads shall furnish the information to the committee.

Railroad Wages in November

The Interstate Commerce Commission's monthly summary of wage statistics of Class 1 railways for the month of November, shows a total of 1,729,061 employees as of the middle of the month; total compensation to employees for the month, $239,809,138. Compared with the returns for the corresponding month of 1926, the number of employees shows a decrease of 5.41 per cent, and the total compensation a decrease of 5.02 per cent.

Railway Bills in Parliament

Two railway bills, at least, are being introduced at the present session of Parliament by the government. One is to confirm an agreement between the Canadian Pacific and the Canadian National for the construction and joint operation of a line of railway in Alberta, between Rosedale and Bull Pond Creek, a mileage of approximately 40. The estimated cost will be slightly in excess of $1,800,000, each road to pay one-half cost of construction. The time for completion of the line was previously extended to August 1, 1929.

The project has been before Parliament two or three times and when the

(Continued on page 380)

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1927

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Akron, Canton & Youngstown	Dec.	171	$219,482	$436	$235,454	$68,774	$28,669	$10,795	$70,105	$23,684	$200,327	85.1	$35,127	$66,255	$40,577	$38,111
	12 mos.	171	3,023,200	3,950	3,171,453	500,550	373,208	138,012	901,952	181,451	2,092,125	66.0	1,079,328	957,378	584,010	438,856
Atchison, Topeka & Santa Fe	Dec.	9,449	10,949,903	2,991,126	15,751,939	2,254,276	3,576,294	393,251	5,165,635	480,549	11,738,282	74.5	4,013,657	2,576,101	2,539,986	4,294,295
	12 mos.	9,428	150,943,618	38,278,584	206,293,929	33,538,299	40,916,915	4,788,823	59,610,652	4,918,123	142,754,973	69.2	63,538,956	45,647,854	45,893,631	55,493,700
Gulf, Colorado & Santa Fe	Dec.	1,944	2,137,447	257,818	2,551,744	400,172	541,991	54,128	794,612	81,511	1,855,445	72.7	696,299	562,748	403,483	605,782
	12 mos.	1,944	29,681,658	2,859,072	34,195,211	5,955,622	6,741,676	653,298	10,920,238	869,604	24,930,881	72.9	9,264,330	7,823,223	5,959,907	6,525,674
Panhandle & Santa Fe	Dec.	964	947,407	126,299	1,166,128	41,789	244,068	10,461	316,958	29,987	633,514	54.3	532,614	469,267	365,136	68,270
	12 mos.	956	12,588,916	1,557,627	15,128,685	2,319,217	3,179,905	136,123	4,960,566	337,754	10,554,413	69.8	4,574,272	3,995,927	2,749,567	4,059,506
Atlanta & West Point	Dec.	93	122,173	69,980	241,716	38,268	54,576	12,266	108,741	13,453	232,209	96.0	9,507	3,729	—16,113	—102,450
	12 mos.	93	2,038,021	743,213	3,184,475	368,275	548,899	140,726	1,166,447	163,187	2,443,081	77.6	741,394	547,180	354,440	266,038
Western of Alabama	Dec.	133	163,674	65,922	270,988	11,621	60,804	12,527	78,115	13,346	174,225	64.3	96,763	55,491	63,913	—251
	12 mos.	133	2,179,117	695,757	3,187,597	398,569	630,154	146,105	1,029,660	160,445	2,408,477	75.6	779,120	565,430	601,695	641,763
Atlanta, Birmingham & Coast	Dec.	639	330,816	37,929	412,902	86,318	95,268	28,337	126,049	28,550	376,680	91.2	36,222	16,652	—23,660	—27,447
	12 mos.	639	4,332,679	424,528	5,258,713	1,245,069	1,017,424	337,249	1,979,332	226,729	4,943,850	94.0	314,862	138,063	—66,145	145,418
Atlantic Coast Line	Dec.	5,102	4,757,877	1,197,682	6,600,911	1,304,110	1,192,430	186,587	2,409,522	190,287	5,342,903	80.9	1,255,008	687,688	601,765	1,658,834
	12 mos.	5,078	58,862,845	14,956,902	80,452,526	13,237,142	16,847,535	1,983,389	29,549,942	2,140,559	64,353,618	80.0	16,098,908	9,988,541	10,273,934	17,558,783
Charleston & Western Carolina	Dec.	342	222,185	15,258	247,858	42,773	44,532	8,553	106,315	7,483	209,455	84.5	38,403	12,576	12,306	37,145
	12 mos.	342	3,200,056	192,886	3,525,849	662,781	540,272	89,063	1,353,544	83,240	2,728,693	77.4	797,156	550,543	504,574	608,320
Baltimore & Ohio	Dec.	5,637	14,105,176	2,150,651	17,873,833	2,681,448	4,071,673	457,725	7,025,433	919,183	15,327,157	85.8	2,546,676	1,288,429	1,177,480	2,651,572
	12 mos.	5,641	203,567,887	26,286,707	246,078,510	30,894,282	51,318,647	5,599,463	87,289,456	8,851,320	186,168,521	75.7	59,909,989	47,575,385	44,817,227	50,163,850
Baltimore & Ohio Chicago Term.	Dec.	87	.....	.....	309,535	—8,079	66,655	2,643	178,060	18,463	264,371	85.4	45,164	—9,919	79,687	61,793
	12 mos.	87	.....	.....	3,975,102	422,889	487,299	28,377	2,018,868	193,486	3,211,351	80.8	763,751	96,407	1,204,190	1,311,500
Staten Island Rapid Transit	Dec.	23	99,787	116,407	240,199	—2,778	42,140	2,787	108,899	24,000	175,048	72.9	65,151	6,992	—31,117	15,738
	12 mos.	23	1,339,266	1,515,979	3,277,823	426,217	262,950	25,194	1,336,433	195,876	2,246,670	68.5	1,031,153	765,980	299,186	153,786
Bangor & Aroostook	Dec.	613	523,774	84,736	639,605	104,183	159,039	8,468	184,459	40,895	499,197	78.0	140,408	100,578	113,141	125,486
	12 mos.	613	6,371,216	704,327	7,401,075	1,254,495	1,392,447	73,994	1,882,297	315,869	4,956,597	67.0	2,444,478	1,847,652	2,086,303	1,890,047
Belt Ry. Co. of Chicago	Dec.	32	.....	.....	613,882	58,039	85,516	3,816	323,630	10,462	481,463	78.4	132,419	84,735	142,259	—129,393
	12 mos.	32	.....	.....	7,537,959	674,492	808,462	42,671	3,374,613	126,075	5,026,313	66.7	2,511,646	1,936,766	1,709,314	1,741,504
Bessemer & Lake Erie	Dec.	227	526,196	11,779	553,132	108,683	323,358	16,352	248,912	61,137	760,418	137.5	—207,286	—187,885	—169,225	266,484
	12 mos.	227	13,031,756	141,847	13,410,859	1,385,271	3,874,928	180,046	3,800,169	432,275	9,580,670	71.4	3,830,189	3,203,379	3,539,631	6,294,544
Bingham & Garfield	Dec.	33	33,849	.....	35,017	11,869	3,226	1,664	10,006	5,606	32,485	92.8	2,532	—3,552	14,648	13,062
	12 mos.	33	471,399	.....	485,657	107,083	99,258	17,299	119,997	60,061	405,048	83.4	80,609	—6,197	193,564	244,978
Boston & Maine	Dec.	2,112	3,923,933	1,432,874	6,253,265	2,435,101	1,217,069	76,563	2,631,794	221,198	6,596,934	105.5	—343,669	—629,095	—846,173	600,642
	12 mos.	2,112	50,055,425	18,426,031	77,848,374	13,288,333	14,889,501	943,752	29,906,292	2,618,825	61,835,501	79.4	16,012,873	12,436,597	9,500,773	12,841,103
Brooklyn Eastern Dist. Terminal	Dec.	9	110,942	.....	117,098	14,680	18,828	50	47,602	10,154	91,314	78.0	25,784	23,403	23,403	27,944
	12 mos.	9	1,372,902	.....	1,447,096	130,864	163,483	5,654	548,884	82,109	930,994	64.2	516,102	439,472	440,392	522,259
Buffalo & Susquehanna	Dec.	253	114,221	1,704	120,643	18,408	38,413	1,755	41,139	7,371	107,086	88.8	13,557	13,176	26,219	44,706
	12 mos.	253	1,449,246	20,250	1,530,183	331,565	598,930	21,000	507,381	93,962	1,552,838	101.5	—22,655	—34,915	161,755	49,398
Buffalo, Rochester & Pittsburgh	Dec.	601	1,224,603	98,747	1,381,970	152,974	464,298	35,441	541,341	40,054	1,216,288	88.0	165,682	184,574	214,236	227,911
	12 mos.	601	15,800,753	1,085,138	17,522,081	2,276,992	5,649,877	356,957	6,662,273	532,215	15,485,430	88.4	2,036,651	1,700,054	1,920,665	3,292,978
Canadian Pacific Lines in Maine	Dec.	233	207,413	42,298	262,699	23,917	68,018	7,345	152,521	3,947	255,748	97.4	6,951	—10,271	—36,281	47,373
	12 mos.	233	1,984,013	375,250	2,518,257	584,011	625,704	73,658	1,188,616	45,171	2,517,160	99.9	1,097	—167,125	—346,405	—100,881
Canadian Pacific Lines in Vermont	Dec.	85	21,318	32,184	69,944	23,674	37,636	2,902	83,934	2,851	150,997	215.9	—81,053	—85,819	—471,598	4,250
	12 mos.	85	1,168,870	399,224	1,828,609	288,924	359,948	29,138	1,136,865	34,046	1,848,921	101.1	—20,312	—77,728	—468,447	—57,290
Central of Georgia	Dec.	1,911	1,422,704	353,670	1,996,979	304,507	392,156	79,479	805,381	94,848	1,682,953	84.3	314,026	214,399	246,829	447,725
	12 mos.	1,911	20,744,335	4,422,904	27,611,087	3,564,353	4,934,292	899,806	10,222,223	1,191,141	20,923,129	75.8	6,687,958	5,119,966	5,055,295	5,953,291
Central New Jersey	Dec.	690	3,372,428	684,687	4,385,198	396,998	1,068,730	50,437	1,806,950	121,025	3,462,563	79.0	922,635	851,302	746,937	—1,083,780
	12 mos.	690	45,767,187	9,114,497	58,745,712	5,460,521	12,863,862	579,723	22,725,529	1,415,880	43,344,247	73.8	15,401,465	11,649,192	10,383,653	8,051,535
Central Vermont	Dec.		Not yet filed													
	12 mos.		Not yet filed													
Chesapeake & Ohio	Dec.	2,705	8,029,504	675,730	9,145,461	1,212,325	2,119,262	129,673	2,785,907	276,954	6,555,301	71.7	2,590,160	1,881,602	2,069,033	3,293,524
	12 mos.	2,702	119,581,903	8,571,444	133,431,722	19,159,095	29,864,391	1,562,225	35,655,625	3,383,233	89,984,785	67.4	43,446,937	34,647,755	36,390,906	37,121,240
Chicago & Alton	Dec.	1,029	1,625,201	509,169	2,390,586	232,991	352,088	77,625	963,727	57,475	1,706,937	71.4	683,649	610,283	446,616	622,083
	12 mos.	1,037	19,443,550	6,188,909	28,345,728	3,692,836	5,974,945	922,230	10,834,895	737,106	22,263,945	78.5	6,081,783	4,844,406	2,733,521	3,986,403
Chicago & Eastern Illinois	Dec.	945	1,564,002	349,449	2,106,078	197,104	450,720	65,613	855,942	84,792	1,662,114	78.9	443,964	308,340	201,791	281,108
	12 mos.	945	20,492,446	4,122,877	26,714,326	3,192,223	5,972,979	983,921	10,430,582	856,556	21,529,900	80.6	5,184,426	3,776,664	2,291,709	2,608,542
Chicago & Illinois Midland	Dec.	133	268,115	8,855	281,561	26,794	47,079	13,935	81,015	15,252	180,374	64.1	101,187	99,412	93,824	—28,829
	12 mos.	133	1,656,098	97,300	1,808,012	436,526	785,855	119,422	669,488	159,565	2,167,150	119.9	—359,138	—419,814	—503,044	373,963
Chicago & North Western	Dec.	8,463	6,841,218	2,175,555	10,787,724	2,247,428	2,170,366	194,618	4,846,379	365,343	9,836,190	91.2	951,534	16,766	—71,054	271,887
	12 mos.	8,465	108,330,428	25,183,382	150,132,960	22,230,791	29,389,959	2,487,716	58,118,913	4,238,657	116,994,267	77.9	33,138,693	23,321,424	20,257,694	22,295,139

Chicago & North Western.....Dec. 8,463 6,841,218 2,175,535 10,787,724 22,230,791 29,389,...
12 mos. 8,465 108,330,428 25,183,382 150,132,960

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Chicago, Burlington & Quincy	Dec.	9,377	$10,197,743	$1,728,978	$13,468,460	$3,028,077	$3,199,327	$265,957	$4,891,104	$383,995	$11,747,808	87.2	$1,720,652	$1,135,924	$673,975	$1,879,164
	12 mos.	9,390	118,497,414	22,058,572	156,320,454	23,668,878	26,486,674	3,161,990	53,503,272	4,407,382	111,917,503	71.6	44,402,951	32,674,980	28,143,308	29,955,831
Chicago Great Western	Dec.	1,496	1,378,783	288,556	1,859,089	192,909	327,475	75,071	869,648	70,246	1,541,012	82.9	318,077	223,232	76,945	170,618
	12 mos.	1,496	19,189,732	3,248,333	24,444,753	3,374,710	4,639,132	933,838	9,952,921	692,437	19,722,210	80.7	4,722,543	3,675,720	1,962,446	2,467,147
Chicago, Indianapolis & Louisville	Dec.	647	1,014,272	188,173	1,349,746	166,241	393,749	41,265	499,572	35,367	1,150,811	85.3	198,935	148,765	81,450	226,569
	12 mos.	650	14,215,427	2,492,832	18,542,197	1,832,247	3,927,455	474,061	6,751,142	436,156	13,571,861	73.2	4,970,336	4,068,105	2,822,709	2,979,140
Chicago, Milwaukee & St. Paul	Dec.	11,252	9,214,817	1,800,418	12,483,298	1,543,691	3,625,333	325,534	5,353,372	379,041	11,311,653	90.6	1,171,645	400,241	—15,672	862,280
	12 mos.	11,208	127,804,440	19,212,551	162,942,819	27,944,845	35,615,377	3,849,551	60,589,389	4,589,698	133,505,998	81.9	29,436,821	20,525,119	14,072,934	18,394,933
Chicago River & Indiana	Dec.	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	12 mos.	20	.....	.....	493,590	44,959	81,769	804	210,741	14,125	352,398	71.4	141,192	61,426	159,900	290,908
Chicago, Rock Island & Pacific	Dec.	7,575	7,390,837	1,818,707	6,793,393	681,927	933,529	9,981	2,595,730	181,155	4,402,322	64.8	2,391,071	1,838,087	3,153,260	3,306,406
	12 mos.	7,569	99,556,238	21,866,085	10,317,334	1,061,919	1,862,733	223,139	3,651,839	335,688	7,063,310	68.5	3,254,024	2,582,503	2,227,233	1,890,474
Chicago, Rock Island & Gulf	Dec.	516	441,546	75,330	568,641	17,353,446	26,708,400	2,772,857	48,074,082	3,760,460	98,270,641	73.9	34,657,284	26,961,892	21,927,425	20,484,478
	12 mos.	483	5,700,354	925,467	7,159,065	74,295	59,663	18,974	219,629	16,462	391,161	68.8	177,480	169,370	171,411	156,854
Chic., St. Paul, Minn. & Omaha	Dec.	1,746	1,516,785	432,292	2,182,475	1,232,546	878,274	239,468	2,560,225	209,097	5,062,407	70.7	2,096,658	1,812,045	1,509,299	1,873,650
	12 mos.	1,746	20,071,439	4,647,982	26,847,105	316,750	391,537	31,735	1,094,368	77,596	1,920,090	88.0	262,385	178,176	109,183	340,742
Clinchfield Railroad	Dec.	309	529,682	21,058	562,903	4,273,992	4,890,234	413,805	11,207,906	914,750	21,800,246	81.2	5,046,859	3,712,763	2,679,421	3,180,089
	12 mos.	309	7,486,776	280,670	7,920,044	96,300	106,639	23,929	129,285	17,212	373,199	66.3	189,704	124,370	176,345	463,858
Colorado & Southern	Dec.	1,053	836,526	91,970	998,453	964,467	1,965,022	275,564	1,632,676	228,751	5,064,728	63.9	2,855,316	1,914,638	3,255,029	4,368,463
	12 mos.	1,054	10,521,858	1,367,059	12,959,440	303,634	284,092	12,953	397,946	47,463	975,929	97.7	22,524	—65,876	—100,622	100,570
Ft. Worth & Denver City	Dec.	533	633,290	218,197	907,853	2,693,007	2,898,566	179,907	4,448,457	521,719	10,745,287	82.9	2,214,153	1,416,413	1,214,511	1,856,544
	12 mos.	498	8,966,873	2,508,347	12,362,993	133,988	112,475	18,634	307,537	36,605	577,115	63.6	330,738	235,956	232,619	463,858
Wichita Valley	Dec.	271	158,533	19,760	188,550	2,186,766	1,958,508	225,171	3,650,941	464,343	8,423,175	68.1	3,939,818	3,295,010	3,138,882	4,368,463
	12 mos.	271	1,611,866	204,841	1,918,219	40,966	11,703	83	49,849	1,766	104,355	55.3	84,195	76,297	52,983	100,570
Columbus & Greenville	Dec.	167	115,596	33,371	157,663	351,532	112,697	521	551,030	23,583	1,038,144	54.1	880,075	768,313	505,324	476,072
	12 mos.	167	1,528,885	268,217	1,881,849	36,138	11,560	3,515	63,138	10,444	124,786	79.2	32,877	29,106	13,611	—5,044
Conemaugh & Black Lick	Dec.	23	47,294	.....	102,126	513,085	217,519	41,868	642,554	135,411	1,549,971	82.4	331,878	295,761	87,677	144,519
	12 mos.	23	958,337	.....	1,669,258	—7,513	30,073	842	66,044	3,421	92,867	90.9	9,259	12,457	12,386	—16,867
Delaware & Hudson	Dec.	881	2,607,173	288,801	3,165,417	202,246	371,272	12,290	990,877	37,859	1,614,544	96.7	54,714	44,712	50,200	35,012
	12 mos.	881	36,208,449	3,604,300	42,692,911	493,239	857,891	50,074	1,237,566	158,264	2,815,078	88.9	350,339	233,217	274,518	155,236
Delaware, Lackawanna & Western	Dec.	998	4,580,679	1,070,427	6,462,331	5,685,597	11,264,610	638,466	14,969,578	1,767,695	34,545,618	80.9	8,147,293	6,742,607	6,710,504	9,927,015
	12 mos.	999	61,685,328	13,008,959	84,699,577	526,709	1,167,157	131,838	2,792,933	177,746	4,847,469	75.0	1,614,862	1,111,015	1,158,871	1,260,345
Denver & Rio Grande Western	Dec.	2,552	2,336,887	270,404	2,838,074	8,121,343	14,646,381	1,630,601	33,093,075	2,137,187	60,237,308	71.1	24,462,269	16,992,432	17,352,617	19,287,962
	12 mos.	2,552	26,462,234	4,090,072	33,144,907	6,753,040	6,107,458	688,052	10,083,398	1,053,836	25,091,775	75.3	8,053,132	5,665,086	6,397,734	7,622,936
Denver & Salt Lake	Dec.	255	381,988	30,637	427,001	48,258	99,983	1,926	102,138	26,750	279,055	75.7	147,946	133,995	131,547	77,225
	12 mos.	255	3,546,552	305,165	4,110,286	1,108,933	1,217,467	21,636	919,422	122,320	3,375,502	65.4	734,784	642,371	676,229	449,541
Detroit & Mackinac	Dec.	315	71,498	14,135	95,878	8,907	24,565	2,031	42,267	6,196	72,524	82.1	23,354	13,379	17,098	—11,382
	12 mos.	355	1,316,788	166,965	1,626,388	352,174	308,985	24,675	556,211	65,553	1,252,601	75.6	373,787	251,923	298,634	134,176
Detroit & Toledo Shore Line	Dec.	50	336,466	.....	339,625	26,771	32,284	3,444	100,651	8,109	171,259	77.0	168,366	145,986	67,495	79,656
	12 mos.	50	4,670,986	.....	4,727,678	670,383	402,864	41,780	1,166,316	100,509	2,381,852	50.4	2,345,826	1,994,530	973,468	1,050,561
Detroit Terminal	Dec.	19	.....	.....	.....	.....	.....	.....	49	3,574	110,324	124.4	—21,651	—23,161	—22,380	—45,676
	12 mos.	19	.....	.....	4,582	88,673	69,327	12,755	965,823	47,470	1,442,739	74.0	506,643	346,612	395,115	358,305
Detroit, Toledo & Ironton	Dec.	495	611,283	63,396	631,399	243,790	267,724	162,999	3,080,106	31,355	572,704	90.7	58,695	15,587	53,739	—51,553
	12 mos.	495	8,431,680	.....	8,671,353	153,338	111,335	.....	.....	457,036	6,953,487	80.2	1,717,866	1,280,020	635,923	2,075,275
Duluth & Iron Range	Dec.	275	53,184	7,913	77,756	1,593,951	1,731,111	2,225	96,278	38,290	323,545	416.1	—245,789	—238,116	—234,961	—334,389
	12 mos.	274	5,767,010	73,405	6,648,645	1,197,373	1,349,483	23,134	1,850,422	263,919	4,682,800	70.4	1,965,845	1,427,407	1,459,061	1,917,646
Duluth, Missabe & Northern	Dec.	307	59,140	8,155	80,239	89,227	149,075	3,492	194,422	41,247	463,903	578.2	—383,664	—433,464	—430,241	—546,381
	12 mos.	306	13,864,357	71,242	15,835,484	2,021,766	2,376,450	38,321	3,099,893	297,880	7,833,437	49.5	8,002,047	6,097,291	6,042,302	8,015,773
Duluth, Winnipeg & Pacific	Dec.	178	190,000	26,265	228,315	40,581	120,271	4,531	91,086	7,454	194,422	85.2	33,893	16,049	22,330	—100,650
	12 mos.	178	2,217,859	232,424	2,568,841	478,676	1,349,483	56,141	870,145	96,638	2,115,292	82.3	453,549	319,561	—22,888	108,538
Elgin, Joliet & Eastern	Dec.	460	1,554,670	5	1,702,378	181,049	181,068	13,608	725,430	69,336	1,394,539	81.9	307,839	121,474	4,221,700	184,833
	12 mos.	460	22,294,063	128	24,281,541	2,489,014	2,376,450	169,769	8,574,505	622,377	16,967,273	69.9	7,314,268	5,943,779	4,221,700	5,657,360
Erie Railroad	Dec.	2,047	6,329,171	955,083	8,008,722	1,718,986	2,068,340	169,018	4,057,684	352,418	8,413,102	105.1	—404,380	—679,587	—810,387	1,241,261
	12 mos.	2,047	87,482,616	11,691,126	108,357,165	14,438,625	27,058,283	1,866,564	44,156,927	3,595,737	91,623,209	84.6	16,733,956	12,468,809	12,125,137	16,527,744
Chicago & Erie	Dec.	269	1,032,287	53,911	1,187,938	138,016	166,399	25,845	430,448	49,207	809,643	68.2	378,295	361,387	66,61...	121,619
	12 mos.	269	12,300,286	639,140	14,121,190	1,666,270	1,589,621	294,989	4,580,339	512,541	8,641,488	61.2	5,479,702	4,890,967	835,563	1,524,979
New Jersey & New York	Dec.	45	28,505	97,679	132,607	12,487	34,061	1,508	80,068	5,815	133,945	101.0	—1,338	—5,065	—38,635	—31,307
	12 mos.	45	357,406	1,174,699	1,595,976	205,752	292,459	19,298	896,635	49,924	1,463,914	91.7	132,062	87,892	—310,041	—225,756
N. Y., Susquehanna & Western	Dec.	134	278,637	46,913	371,097	93,345	57,479	4,910	225,059	12,783	393,570	106.1	—22,473	—49,721	—79,399	21,523
	12 mos.	134	3,839,604	589,591	4,933,623	686,246	754,022	59,585	2,505,504	143,886	4,148,822	84.1	784,801	444,549	165,760	499,429

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Evansville, Indianapolis & Terre Haute.	Dec.	146	$147,526	$5,361	$158,285	$27,471	$27,189	$1,824	$73,537	$5,734	$135,755	85.8	$22,530	$20,514	$1,451	$49,261
	12 mos.	146	2,386,665	60,183	2,522,858	325,294	334,365	26,381	914,041	82,059	1,708,955	67.7	813,903	737,881	234,537	386,420
Florida East Coast	Dec.	858	806,643	338,571	1,380,135	346,723	188,810	57,268	445,122	56,506	1,058,534	76.7	321,601	198,999	135,394	425,946
	12 mos.	851	10,865,689	4,968,715	17,859,635	3,904,292	2,938,108	411,404	6,385,368	633,796	14,375,826	80.5	3,483,809	1,865,708	592,205	5,167,479
Fort Smith & Western	Dec.	249	106,949	12,668	126,658	19,083	17,575	5,512	47,103	7,139	95,888	75.7	30,770	30,348	17,710	22,362
	12 mos.	249	1,412,685	147,662	1,646,670	343,073	347,318	65,926	579,004	90,101	1,417,957	86.1	228,713	169,442	36,618	119,176
Galveston & Wharf	Dec.	13	.....	.....	155,663	49,921	5,265	2,512	35,439	8,948	116,452	74.8	39,211	10,254	10,248	—23,644
	12 mos.	13	.....	.....	1,970,747	620,441	55,611	23,697	403,832	51,266	1,322,680	67.1	648,067	384,610	384,403	408,203
Georgia R. R.	Dec.	328	287,000	77,948	406,965	48,923	84,759	25,084	178,486	26,727	362,786	89.1	44,179	32,975	66,316	336,866
	12 mos.	328	4,411,919	860,170	5,665,409	592,166	1,041,426	284,864	2,424,478	285,504	4,618,446	81.5	1,046,963	890,082	1,064,219	1,373,184
Georgia & Florida	Dec.	445	90,879	15,210	114,670	17,586	22,610	9,531	53,570	7,562	110,739	96.6	3,931	—6,315	—2,703	15,109
	12 mos.	445	1,568,235	188,851	1,851,804	326,976	277,975	119,516	688,375	97,325	1,512,396	81.7	339,408	241,926	223,766	227,298
Grand Trunk Western	Dec.	347	845,489	240,268	1,173,834	177,723	393,760	40,601	568,048	63,715	1,243,049	105.9	—69,215	—89,375	—132,275	302,409
	12 mos.	347	17,183,989	2,325,548	20,553,572	2,488,286	4,486,315	503,008	7,031,843	769,892	15,295,893	74.4	5,257,679	4,308,492	3,000,776	3,096,124
Atlantic & St. Lawrence	Dec.	166	213,498	31,024	283,311	50 083	62,134	6,300	157,854	8,800	286,623	101.1	—3,312	—27,096	—95,568	—5,610
	12 mos.	166	2,009,896	347,313	2,629,771	521,900	475,081	75,564	1,326,915	101,682	2,517,771	95.8	112,000	—51,953	—765,648	—566,425
Chic., Det. & Canada Gr. Tr. Jct.	Dec.	59	315,092	6,813	369,601	33,769	18,215	4,432	97,640	4,406	158,276	42.8	211,325	201,825	174,125	216,901
	12 mos.	59	3,423,619	21,939	3,913,739	472,764	207,579	54,941	1,208,586	53,194	1,995,404	51.0	1,918,335	1,794,568	1,406,509	1,290,962
Detroit, Grand Haven & Mil.	Dec.	189	438,217	35,995	515,268	75,903	64,294	12,637	256,066	18,845	426,231	82.7	89,037	140,137	55,997	—71,842
	12 mos.	189	7,167,168	349,715	8,127,429	1,062,611	732,379	156,594	3,170,491	227,732	5,336,869	65.7	2,790,560	2,697,225	1,450,199	—1,721,891
Great Northern	Dec.	8,163	5,692,095	1,167,864	7,777,286	767,122	1,830,168	241,807	3,064,292	245,801	6,189,217	79.6	1,588,069	1,907,082	1,840,151	1,718,717
	12 mos.	8,164	94,405,030	12,716,616	117,904,005	14,812,274	20,094,412	2,645,367	37,446,431	2,676,389	78,355,580	66.5	39,548,425	30,502,604	29,202,540	31,280,429
Green Bay & Western	Dec.	234	112,082	8,012	126,819	11 573	13,058	5,028	45,047	3,066	77,772	61.3	49,047	43,413	38,201	6,712
	12 mos.	234	1,431,175	71,061	1,579,393	307,523	248,249	55,349	582,612	33,420	1,226,558	77.6	352,835	257,200	223,694	245,194
Gulf & Ship Island	Dec.	307	208,627	45,145	273,450	63,527	48,854	4,997	108,521	8,914	237,847	87.0	35,603	—253	—18,507	—128,983
	12 mos.	307	3,015,265	478,236	3,763,553	1,286,505	679,617	66,290	1,460,464	99,477	3,632,201	96.5	131,352	—176,734	—348,895	—1,080,651
Gulf, Mobile & Northern	Dec.	733	507,602	41,613	573,826	101,516	84,366	32,025	206,639	31,002	455,792	79.43	118,034	97,006	68,629	91,698
	12 mos.	711	6,562,727	417,279	7,268,700	1,305,834	1,099,025	364,171	2,211,462	334,957	5,318,884	73.18	1,949,816	1,501,991	1,201,668	1,517,723
Hocking Valley	Dec.	348	929,023	66,965	1,090,831	155,325	286,729	16,883	415,966	45,877	920,780	84.4	170,051	57,068	82,914	146,541
	12 mos.	348	18,203,368	797,312	21,042,515	2,430,765	4,419,476	198,443	5,928,171	531,654	13,508,216	64.2	7,534,299	6,011,680	4,930,766	4,197,035
Illinois Central	Dec.	4,915	9,250,694	2,057,469	12,293,440	1,305,208	3,311,676	254,215	4,676,319	347,346	9,946,919	80.9	2,346,521	1,653,029	1,713,209	2,047,757
	12 mos.	4,904	121,455,679	23,114,971	155,822,064	18,280,414	37,311,203	3,064,165	55,277,536	4,186,228	118,982,761	76.4	36,839,303	26,784,861	25,615,627	26,202,012
Yazoo & Mississippi Valley	Dec.	1,708	1,543,815	414,291	2,115,035	477,801	510,278	47,556	839,131	71,798	1,944,260	91.9	170,775	125,713	57,975	571,874
	12 mos.	1,709	21,296,797	3,950,228	26,975,610	6,323,095	5,059,095	579,486	9,861,507	873,582	22,740,357	84.3	4,235,253	2,355,117	1,599,071	3,998,521
Illinois Central System	Dec.	6,624	10,804,362	2,476,981	14,423,554	1,783,009	3,826,165	301,771	5,527,132	419,196	11,907,124	82.6	2,516,430	1,773,647	1,779,148	2,623,711
	12 mos.	6,613	142,870,180	27,117,260	182,967,560	24,603,509	42,445,655	3,643,651	65,261,582	5,060,440	141,921,644	77.6	41,045,916	29,054,282	27,275,940	30,279,937
Kansas City, Mexico & Orient	Dec.	272	248,229	8,499	265,484	399,476	45,554	8,309	79,495	—218 679	314,058	118.3	—48,574	—52,779	—36,477	6,317
	12 mos.	272	2,839,012	83,978	3,029,695	1,336.727	617,652	104,782	1,171,804	—106.008	3,118,795	102.9	—89,100	—141,396	6,610	58,557
Kansas City, Mex. & Orient of Tex.	Dec.	465	737,457	25,844	779,104	560,608	84,376	9,796	157,994	— 29,926	782,673	100.5	—3,569	—11,266	—56,397	61,171
	12 mos.	465	6,672,189	231,302	7,105,596	2,601,605	896,223	117,747	2,103,403	101,634	5,817,205	81.9	1,288,391	1,202,156	246,936	191,129
Kansas City Southern	Dec.	784	1,216,321	107,350	1,486,359	189,282	249,537	56,315	495,745	97,706	1,083,812	72.9	402,547	335,084	273,275	303,021
	12 mos.	784	15,862,212	1,302,278	19,075.667	2,158,070	3,176,458	637,557	5,921,422	1,044,203	12,913,138	67.7	6,162,529	4,876,657	4,177,402	4,212,152
Texarkana & Ft. Smith	Dec.	81	185,667	9,889	216,034	34,410	28.648	8,426	72,916	11,852	157,496	72.9	58,538	85,411	58,878	56,879
	12 mos.	81	2,627,719	116,429	2,972,939	445,559	320,013	79,215	864,361	126,878	1,851,353	62.3	1,121,586	1,003,215	590,617	791,690
Kansas, Oklahoma & Gulf	Dec.	326	240,563	4,532	250,688	54,970	84,747	11,332	71,566	11,139	227,972	90.9	22,716	9,847	—6,341	—192,562
	12 mos.	326	2,814,809	54,665	2,937,043	998,383	310,625	120,098	822,602	97,080	2,301,160	78.3	635,883	517,693	319,652	—585,269
Lake Superior & Ishpeming	Dec.	160	46,516	3,263	50,736	27,710	30,417	1,205	35,619	8,466	103,392	203.8	—52,656	—62,453	—65,480	—50,117
	12 mos.	160	2,001,090	28,730	2,322,021	409,170	316,308	7,482	568,577	63,371	1,364,677	58.8	957,344	687,638	655,989	722,126
Lake Terminal	Dec.	13	.....	.....	70,889	25,070	20,492	.....	49,966	3,955	99,483	140.3	—28,594	—34,722	—35,598	—17,966
	12 mos.	13	.....	.....	1,073,037	195,858	259,622	.....	659,747	24,526	1,139,753	106.2	—66,716	—130,077	—135,866	—2,662
Lehigh & Hudson River	Dec.	96	240,623	1,449	252,130	53,993	46,036	2,464	114,238	11,978	228,706	90.7	23,424	14,528	—10,570	20,131
	12 mos.	96	3,194,510	22,734	3.362,338	444,480	521,201	26,665	1,186,597	119,941	2,298,799	68.4	1,063,539	863,101	574,097	691,313
Lehigh & New England	Dec.	216	349,391	1,228	356,445	54,581	83,950	5,663	155,773	16,104	315,609	88.5	40,836	35,997	39,974	93,765
	12 mos.	216	5,683,672	13,978	5,798,454	641,674	1,230,010	65,589	1,927,505	198,165	4,037,225	69.6	1,761,229	1,511,675	1,425,133	1,707,436
Lehigh Valley	Dec.	1,363	4,361,520	642,178	5,447,549	540,119	1,318,763	135,560	2,286,148	139,119	4,455,828	81.8	991,721	714,387	558,290	779,455
	12 mos.	1,363	61,207,680	7.688,474	74,502,819	8.310.466	16,880,948	1,632,774	30,276,911	1,747,742	59,270,392	79.6	15,232,427	11,749,269	9,835,767	13,802,605
Louisiana & Arkansas	Dec.	302	236,945	13,599	258,229	46,751	44,908	12,269	88,145	11,858	203,451	78.8	54,778	39,093	31,305	66,652
	12 mos.	302	3,258,466	171,728	3,562,302	640,481	707,165	135,798	1,070,810	139,394	2,690,159	75.5	872,143	559,387	430,349	860,923
Louisiana Ry. & Nav. Co.	Dec.	337	274,474	13,769	298,316	53,456	36,014	11,432	118,790	10,877	224,677	75.3	73,639	43,668	9,899	—651
	12 mos.	337	2,960,695	151,113	3,291,531	705,151	414,965	149,528	1,377,014	120,039	2,730,062	82.9	561,469	285,885	—63,394	—15,623

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Louisiana Ry. & Nav. Co. of Tex.	Dec.	206	$87,752	$4,983	$96,419	$22,537	$11,577	$3,046	$49,363	$6,539	$92,448	95.9	$3,971	$6,439	—$6,830	$11,903
	12 mos.	206	1,021,994	55,587	1,121,588	258,102	160,162	38,302	487,683	72,751	1,016,112	90.6	105,476	63,142	—99,218	—80,605
Louisville & Nashville	Dec.	5,069	8,270,242	1,720,018	10,751,498	1,815,254	2,481,271	331,854	4,061,620	370,236	9,097,318	84.6	1,654,180	1,045,558	1,049,659	1,420,872
	12 mos.	5,064	116,384,472	20,026,869	144,605,117	22,147,439	32,443,885	3,189,787	50,531,905	4,079,913	112,857,834	78.0	31,747,283	24,087,731	23,876,834	27,072,825
Louisville, Henderson & St. Louis	Dec.	199	238,989	49,595	310,641	65,954	58,090	11,452	121,979	13,248	272,407	87.7	38,234	22,793	15,079	34,326
	12 mos.	199	3,317,146	593,466	4,127,231	738,706	630,408	105,884	1,367,469	147,277	2,998,274	72.6	1,128,957	871,949	761,382	601,499
Maine Central	Dec.	1,121	1,078,756	317,931	1,553,189	266,926	316,981	15,363	672,107	52,432	1,323,596	85.2	229,593	110,938	80,898	194,332
	12 mos.	1,121	14,663,485	3,650,701	20,217,535	3,252,533	3,837,605	187,072	8,121,176	657,929	16,073,451	79.5	4,144,084	2,769,588	2,452,653	3,133,026
Midland Valley	Dec.	364	266,608	21,916	297,501	39,209	207,535	8,482	84,797	16,596	353,700	118.9	—56,199	—59,567	—85,167	67,370
	12 mos.	364	3,517,486	310,536	3,964,918	642,016	610,392	90,479	1,009,258	186,450	2,529,253	63.8	1,435,665	1,226,657	963,071	1,297,473
Minneapolis & St. Louis	Dec.	1,627	907,040	111,355	1,086,124	125,196	256,896	38,158	581,301	49,459	1,049,068	96.6	37,056	—27,429	—80,398	—35,481
	12 mos.	1,627	12,589,120	1,054,144	14,413,216	2,226,011	3,144,562	429,315	6,510,114	545,935	12,842,315	89.1	1,570,901	858,168	184,694	222,173
Minneapolis, St. Paul & S. S. Marie	Dec.	4,385	2,782,598	482,169	3,566,532	460,721	665,537	67,523	1,626,032	110,165	2,943,564	82.5	622,968	464,746	276,448	424,032
	12 mos.	4,395	39,710,734	5,603,798	49,157,009	6,501,435	8,695,413	888,135	18,046,384	1,353,870	35,735,614	72.7	13,421,395	10,447,488	8,663,348	7,007,261
Duluth, South Shore & Atlantic	Dec.	583	244,001	75,096	319,395	63,553	59,934	7,668	134,041	5,078	275,447	86.2	43,948	13,062	—2,568	—23,380
	12 mos.	588	3,897,577	785,974	5,121,693	886,358	809,775	92,845	2,089,334	127,894	4,061,518	79.3	1,060,175	689,273	516,015	342,094
Spokane International	Dec.	165	70,189	14,845	93,200	7,758	7,415	4,110	33,248	6,371	59,959	64.3	33,241	27,610	20,755	23,995
	12 mos.	165	1,023,333	132,938	1,239,384	207,285	96,424	45,213	387,646	78,178	828,733	66.9	410,651	345,465	246,195	290,212
Mississippi Central	Dec.	161	114,690	9,800	128,472	22,398	23,652	9,821	38,874	7,158	97,650	76.0	30,822	24,421	24,314	27,048
	12 mos.	161	1,487,466	111,398	1,653,416	262,042	317,860	104,811	440,516	93,161	1,213,983	73.4	439,433	334,427	370,318	422,939
Missouri & North Arkansas	Dec.	364	103,024	13,886	123,607	46,065	20,914	9,397	62,303	8,390	145,069	117.4	—21,462	—23,844	—34,633	—22,645
	12 mos.	364	1,398,671	172,986	1,682,613	496,239	197,664	117,212	659,347	96,861	1,566,997	93.1	115,616	86,448	—43,727	—160,392
Missouri-Kansas-Texas	Dec.	1,799	2,156,011	316,652	2,726,090	332,035	529,219	66 443	745,304	99,533	1,765,727	64.8	960,363	795,050	800,955	781,491
	12 mos.	1,799	28,642,706	3,958,464	35,236,541	4,919,726	7,510,166	779,469	8,973,878	1,152,199	23,363,037	66.3	11,873,504	9,407,640	9,378,298	9,520,903
Missouri-Kansas-Texas of Texas	Dec.	1,389	1,145,410	337,596	1,649,039	362.373	197,172	50,332	730,644	66,653	1,400,478	84.9	248,561	170,827	7,318	497,443
	12 mos.	1,389	15,319,054	3,853,739	20,944,987	3 320 884	2 888,745	611,328	8,297,454	788,497	15,976,136	76.3	4,968,851	4,286,463	2,321,675	3,479,360
Missouri Pacific	Dec.	7,396	8,105,696	1,215,409	10,213,914	2,352,599	1,801,692	269,443	3,941,037	363,047	8,738,477	85.6	1,475,437	1,240,083	921,770	1,584,049
	12 mos.	7,361	100,788,411	14,652,503	125,728,405	21,820,236	23,764,538	3,410,975	46,237,278	4,275,909	99,565,998	79.2	26,162,407	21,346,800	16,899,498	20,333,786
Gulf Coast Lines	Dec.	1,007	922,510	155,957	1,158,101	349,097	299.534	39,664	428 960	54,198	1,170,128	101.03	—12,027	—85,846	—137,971	143,772
	12 mos.	993	12,658,613	1,866,831	15,428,651	3,195,139	2,782,675	474,560	4,977,381	669,681	12,084,940	78.33	3,343,711	2,590,192	1,910,674	3,415,735
International-Great Northern	Dec.	1,159	1,152,388	219,383	1,495,984	299.705	293,545	33,145	633,134	61,457	1,320,422	88.26	175,562	135,761	74,843	221,984
	12 mos.	1,159	14,411,213	2,415,829	18,428,470	3,266,301	3,273,793	438,423	7,356,863	754,797	14,954,672	81.15	3,473,798	2,970,892	2,178,180	2,555,193
San Antonio, Uvalde & Gulf	Dec.	318	103,743	18,412	134,951	27 833	32,212	5,610	54,572	6,292	126,803	94.0	8,148	1,689	—18,520	—11,452
	12 mos.	318	1,525,266	238,721	1,919,355	389,502	277,706	61,617	673,138	75,585	1,477,777	77.0	441,578	395,246	95,020	223,604
Texas & Pacific	Dec.	2,015	2,991,232	594,517	3,910,586	647,200	586,930	79,623	1,301,578	102,726	2,714,557	69.4	1,196,029	1,059,190	890,867	735,655
	12 mos.	1,980	30,596,471	5,694,201	38,949,539	6,832,210	6,801,243	884,733	13,053,386	1,176,531	28,797,073	73.9	10,152,466	8,296,789	6,497,569	6,240,676
Mobile & Ohio	Dec.	1,161	1,153,375	118,115	1,350,780	193.265	190,570	59,166	539,119	53,219	1,007,946	74.6	342,834	258,664	242,777	201,233
	12 mos.	1,161	15,753,546	1,307,045	18,055,294	2,676,027	3,149,553	651,629	6,594,777	572,620	13,594,791	75.3	4,460,503	3,376,444	2,931,071	3,404,766
Monongahela	Dec.	171	522,888	21,685	550,642	103,805	72,719	1,008	158,158	11,038	345,315	62.7	205,327	188,505	96,215	189,801
	12 mos.	171	7,368,618	282,757	7,729,914	988,805	867,719	12,603	1,966,106	122,182	3,945,726	51.0	3,784,188	3,439,773	2,240,514	2,263,060
Monongahela Connecting	Dec.	7	.....	.....	133,850	13,061	29,566	374	67,986	6,549	117,536	87.8	16,314	10,022	10,861	12,705
	12 mos.	7	.....	.....	1,919,642	208,526	374,383	4,517	853,619	41,274	1,482,319	77.2	437,323	336,897	316,163	431,939
Montour	Dec.	57	102,027	105	102,869	—32,664	64,201	1,184	28,057	6,645	63,495	61.7	39,374	38,337	60,600	43,029
	12 mos.	57	1,289,961	2,483	1,299,958	279,622	556,557	14,467	287,687	95,111	1,228,727	94.5	71,231	53,042	427,372	319,446
Nashville, Chattanooga & St. Louis	Dec.	1,259	1,245,630	312,097	1,718,368	213.842	454,948	85,463	655,548	76,248	1,499,365	87.3	219,003	146,704	161,689	284,526
	12 mos.	1,259	17,151,537	3,849,645	22,905,626	3,124,693	4,885,192	998,498	8,272,065	928,645	18,282,454	79.8	4,623,172	3,656,714	3,841,261	4,018,155
Nevada Northern	Dec.	165	73,028	5,431	87,135	10,218	12,430	1,031	15,985	5,473	45,296	52.0	41,889	14,069	12,100	34,129
	12 mos.	165	815,931	67,980	974.814	145,142	68,456	11,304	186,761	57,893	471,837	48.4	502,977	348,639	351,125	372,931
Newburgh & South Shore	Dec.	7	.....	.....	162,250	16,190	34,155	.....	67,058	5,898	123,301	76.0	38,949	—32,925	—44,316	—29,793
	12 mos.	7	.....	.....	1,843,472	229,362	428,365	.....	753,899	53,243	1,464,869	79.5	378,603	168,024	198,673	283,946
New Orleans Great Northern	Dec.	276	226,394	23,742	258,565	39,979	46,610	14,289	83,006	14,163	198,290	76.7	60,275	38,695	21,597	51,261
	12 mos.	275	2,900,947	295,946	3,309,395	512,902	637,165	121,521	932,507	133,675	2,333,871	70.5	975,524	768,283	547,177	592,389
New Orleans Terminal	Dec.	20	4,192	.....	118,987	20,312	9,625	.....	60,082	1,593	91,612	77.0	27,375	18,371	10,059	—69,489
	12 mos.	20	26,433	.....	1,917,743	267,548	116,183	.....	727,915	21,884	1,133,880	59.1	783,863	653,764	490,213	501,584
New York Central	Dec.	6,925	16.493,104	8,547,610	29,341,107	3,920,912	6,047,025	445,363	11 380,652	1,107,254	23,380,760	79.7	5,960,347	4,582,474	4,369,915	5,287,795
	12 mos.	6 925	236,020,694	99,103,455	385,046,787	54,314,210	79,597,261	5,150,959	136,107,595	14,193,140	294,910,984	76.6	90,135.803	65,071,678	62,227,717	72,158,492
Cincinnati Northern	Dec.	244	315,911	5,653	327,859	36.441	55,077	5.673	119 873	10,035	227,077	69.3	1 0,782	51,200	24,108	70,087
	12 mos.	244	4,461,650	69,559	4,636,369	561,914	900,283	75,039	1,482,730	133,266	3,153,644	68.0	1,482.725	1,137,433	796,818	1,056,117
Clev., Cinn., Chicago & St. Louis	Dec.	2,396	4,676,998	1,358,457	6,638,258	839,352	1,331,545	134,245	2,858,194	286,541	5,520,285	83.2	1,117,973	791,355	616,066	1,720,256
	12 mos.	2,396	67,979,881	15,570,227	91,185,737	11 103,049	19,338.702	1,748,909	33,952,399	3,272,167	70,322,699	77.1	20,863.038	15,800,561	14,603,067	18,527,246
Indiana Harbor Belt	Dec.	117	.....	.....	908,380	110,074	147,855	4,902	417,601	24,823	713,057	78.5	195,323	140,486	71,898	112,283
	12 mos.	117	.....	.....	11,435,824	1,659,975	1,713,117	57,610	4,662,144	313,077	8,521,645	74.5	2,914,179	2,359,305	1,749,645	1,876,826

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Michigan Central	Dec.	1,858	$4,076,593	$1,838,992	$6,659,441	$626,173	$1,282,078	$129,123	$2,419,930	$238,508	$4,792,967	72.0	$1,866,474	$1,365,790	$1,380,324	$1,621,270
	12 mos.	1,858	60,355,090	20,202,686	89,750,602	10,344,919	16,718,888	1,511,077	29,525,765	3,026,330	62,244,288	69.4	27,506,314	21,232,930	20,988,826	23,565,130
Pittsburgh & Lake Erie	Dec.	231	1,782,091	223,826	2,074,326	261,943	742,721	31,578	825,244	86,894	1,951,674	94.1	122,652	—21,106	357,722	793,781
	12 mos.	231	28,006,065	2,754,192	31,785,820	4,576,893	9,936,360	311,957	10,442,720	1,031,057	26,320,312	82.8	5,465,508	3,460,149	8,005,295	9,146,804
New York, Chicago & St. Louis	Dec.	1,690	3,867,894	145,668	4,147,983	254,711	798,509	121,028	1,509,416	148 648	2,811,079	67.8	1,336,904	1,407,895	1,219,918	788,426
	12 mos.	1,690	50,031,353	1,817,642	53,619,600	6,683,235	10,137,156	1,486,004	18,587,977	1,873,962	38,574,494	71.9	15,045,106	12,320,988	9,995,984	10,157,801
N. Y., New Haven & Hartford	Dec.	2,167	5,604,744	4,304,857	11,260,167	1,406,965	2,187.540	88.231	3,985,137	331,671	8,187,954	72.7	3,072,213	2,483,198	1,919,225	1,598,468
	12 mos.	2,174	75,002,396	49,436,067	139,824,315	19,050,871	26.694,508	1,086,293	47,409,755	3,859,648	100,278,252	71.7	39,546,063	33,091,659	25,235,284	24,776,370
New York Connecting	Dec.	20	229,786	.....	266,189	44,913	16,156	.....	44,129	1,900	107,098	40.2	159,091	122,168	102,237	50,261
	12 mos.	20	2,688,412	.....	3,068,455	353.007	174.677	.....	617.710	21,531	1,166,925	38.0	1,901,530	1,444,607	1,243,386	1,240,071
New York, Ontario & Western	Dec.	569	615,578	90,391	878,243	121,624	185,966	20,926	464,729	36,132	835,779	95.2	42,464	36,426	—10,130	—12,795
	12 mos.	569	8,420,453	2,611,338	13,157,620	1,971,657	2.610,149	222,001	5,695,969	420,550	10,972,046	83.4	2,185,574	1,726,945	1,066,137	1,808,130
Norfolk & Western	Dec.	2.241	6,899,453	569,134	7,801,479	1,089,786	1,210,141	114.156	2.252,147	242,868	4,921,355	63.1	2,880,124	2,079,654	2,321,619	3,320,322
	12 mos.	2,241	99,992,235	6,893,708	110,948,200	15,711,540	21,261,405	1,340,034	28,988,768	2,558,174	69,696,125	62.8	41,252,075	30,938,335	34,010,951	40,922,151
Norfolk Southern	Dec.	931	626,234	55,938	729,247	102,815	116,045	25,478	293,809	31,044	565,842	77.6	163,405	131,651	104,928	110,422
	12 mos.	931	8,352,412	651,090	9,567,021	1,202,581	1,483,413	308,930	3,570,917	359,630	6,827,968	71.4	2,739,053	2,093,047	1,718,182	1,786,087
Northern Pacific	Dec.	6.667	5,717,318	1,037,196	7,532,352	690,559	1.615,509	165,044	2,710.113	276.098	5,520,182	73.3	2,012,170	1,673,193	2,077,664	1,947,034
	12 mos.	6,669	75,462,955	11,773,283	95,574,816	11,965,278	17,865,172	2,336,114	31,902,293	3,034,993	67,854,738	71.	27,720,078	18,792,944	22,592,837	24,213,700
Northwestern Pacific	Dec.	477	230,891	142,851	424,088	106,523	88,262	11.091	236.510	22,181	462,524	109.1	—38,436	—79,170	—89,746	—34,452
	12 mos.	477	4,099,889	1,885,924	6,606,409	1,235,798	999,822	101.251	2,778,600	250,136	5,362,096	81.2	1,244,313	754,735	613,599	1,229,240
Pennsylvania R. R.	Dec.	10.500	31,012,990	11,688,460	47.963,496	8,562,547	11,190,983	826.590	19,443,987	1,585,785	42 266,419	88.1	5,697,077	3,415,072	2,343,614	4,687,321
	12 mos.	10,500	461,612.156	140,810,692	664,851,023	87,929,524	140,878.861	9,578,003	245,052,205	18,971,707	510,668,662	76.8	154,182,361	118,323,001	103,977,303	106,432,758
Baltimore, Chesapeake & Atlantic	Dec.	130	60.274	28,643	96,692	5,469	52,070	1,528	76,153	3,614	138,834	143.6	—42,142	—42,142	—43,656	—31,927
	12 mos.	130	987.541	387,431	1,466,381	141,763	407,891	23,008	955.150	41,250	1,569,062	107.0	—102,681	—151,947	—161,560	—154,017
Long Island	Dec.	403	856.637	2,017,132	3,108.312	440.499	387.348	41,473	1,410,709	93.040	2.379,755	76.6	728,557	621,819	450,475	300,902
	12 mos.	403	11.856,835	26,357,289	40,886,580	5,510.801	6,271,392	407,722	16,807,793	984,860	30,111.966	73.6	10,774,614	8,256,196	6,162,578	5,832,229
West Jersey & Seashore	Dec.	378	364,121	286,634	690,606	219.580	121.628	14,421	395,949	24.588	773,753	112.0	—83,147	—84,284	—133,700	34,300
	12 mos.	378	5.078,385	6,001,070	11.643,817	1,921.567	1 915.712	236,309	5,442,517	325,807	9,847,874	84.6	1,795,943	912,414	677,425	1,162,092
Peoria & Pekin Union	Dec.	19	20 470	2.540	161,800	15,682	13.099	2,619	76.546	8,204	116,150	71.8	45,650	10,750	31,500	18,557
	12 mos.	19	285.890	27,593	1,859,304	255,929	172.789	21.185	819,885	99,654	1,369,442	73.7	489,862	234,888	493,162	507,681
Pere Marquette	Dec.	2.244	2.583.669	268.624	3,067,029	254,401	741.540	65.982	1,175,608	110,495	2,346,332	76.5	720,697	542,156	472,580	460,017
	12 mos.	2,244	38,767,139	3,247,316	44,744,593	4,921,516	9,515,273	765,142	15,105,884	1,337,137	31,639,864	70.7	13,104,729	10,605,953	9,291,668	9,793,224
Pittsburgh & Shawmut	Dec.	102	173,806	5,542	180,934	21,817	38.915	1,717	50,104	7,523	120,076	66.4	60,858	59,632	51,888	45.503
	12 mos.	102	1.824,802	43.704	1,896.899	279,563	565 497	19.053	523.044	103,626	1,490,783	78.6	406,116	391,732	465,372	504,304
Pittsburgh & West Virginia	Dec.	92	238,223	6,513	277,080	11,676	67,096	13,097	57,964	30,082	189,171	68.3	87,909	50,426	115,057	251,415
	12 mos.	92	3,552,917	75,349	4,011,617	264,512	733,564	125,676	830,855	317,287	2,413,548	60.2	1,598,069	1,046,278	1,947,222	2,713,043
Pittsburgh, Shawmut & Northern	Dec.	198	151.591	2,424	157.092	26,709	47,358	1,501	52,754	6,649	134,971	85.9	22,121	20.079	13,509	—16.429
	12 mos.	198	1,790,469	28,401	1,859.339	386.307	379 063	18.858	674,763	80.152	1,539.143	82.8	320.196	285,086	178,959	186,891
Quincy, Omaha & Kansas City	Dec.	249	43,283	11.344	61 691	23.691	9.221	845	29,218	3,067	65.842	106.7	—4,151	2.716	—224	—15,058
	12 mos.	249	581,174	139,029	807,175	375,085	129,144	9,791	348,639	31,324	892,059	110.5	—84,884	—142,457	—179,302	—113,383
Reading	Dec.	1,138	5.842,932	776.277	6,976,563	919,725	1.834,933	79,441	2,962,103	223,769	6,009,915	86.1	966,648	724,360	839,072	1,376,689
	12 mos.	1,139	79,337,231	8,922,777	92,590,436	12,661,838	20,879.846	970.219	34,894,429	2,445,874	71,880,069	77.6	20,710.367	15,515,937	16,790,121	22,032,863
Atlantic City	Dec.	161	114,251	91.313	221.705	4,177	—3.821	7.203	183,567	13,520	204,691	92.3	17,014	—23,865	—43,264	45,310
	12 mos.	161	1,545,325	2,429,554	4,205,844	939,519	346,524	87,197	2,388,772	77,153	3,840,589	91.3	365,255	—83,278	—441,430	114,607
Perkiomen	Dec.	41	88,950	3,156	95,679	12,150	5.971	111	49,193	1,273	68,743	71 8	26,936	21,141	14.403	25,787
	12 mos.	41	1,189,202	50,498	1,277,648	136,405	76 084	1,299	560,665	14,245	789,191	61.8	488,457	421,610	337,005	498,012
Port Reading	Dec.	19	135.243	.....	173,740	15.692	5.423	229	90.698	1,608	113,650	65.4	60.090	43.501	—22,319	38,934
	12 mos.	19	1.853.456	.....	2.427 509	328,490	133.622	2.748	860.965	29.585	1,355.375	55.8	1,072,134	874,928	130,244	10,076
Richmond, Fredericksburg & Potomac	Dec.	117	401,483	347,539	1,000,341	118.643	162.183	10.429	323.675	35.639	673,560	67.3	326,781	255,765	202,347	196,898
	12 mos.	117	5,520,330	3,938,196	11,595,722	1,414.940	2.027.984	109,090	4,143,252	433,090	8,438,157	72.8	3,157,565	2,488,048	1,875,648	2,662,956
Rutland	Dec.	413	279,787	116.851	560,104	124.657	101.365	9.432	249.037	16.957	503,604	89.9	56.500	40,047	44,990	77,768
	12 mos.	413	3,599.201	1,139.719	6,197,106	1,483.601	1.209 275	129 635	2.542.984	171,207	5,556.639	89 7	640,467	379,843	435,101	970,496
St. Louis-San Francisco	Dec.	5.030	4,874,634	1,187,770	6,627,211	533,060	1.194.598	118 251	2.363,798	245,324	4,309,776	65 0	2.317,435	1,952,217	1,975,576	1,884,191
	12 mos.	5,019	64,484,872	13,998,030	84,641,835	10,826,439	16,492,081	1,384,213	27,687,754	2,950,680	58,273,551	68 8	26,368,284	21,528,640	22,060,265	23,121,929
Ft. Worth & Rio Grande	Dec.	233	89,175	15,679	118,242	24,982	18.502	3,453	51,365	5,352	103.678	87.7	14,564	9,705	134	—2,308
	12 mos.	233	980.888	182,145	1,300,461	304.434	258.119	40.210	646.007	66.383	1,312,392	100.9	—11,931	—61,776	—167,770	—228,494
St. Louis-San Francisco & Texas	Dec.	137	144,741	11,961	163,050	56.088	23.855	4,790	52,406	6,855	144,059	88.4	18,991	15,048	—8,395	13,170
	12 mos.	137	1,684,754	165,440	1,906,472	388,952	317,921	59 739	704,336	89,237	1,559,052	81.8	347,420	314,884	41,551	174,627
St. Louis Southwestern	Dec.	940	1,178.765	116,836	1,373,403	182,754	223,573	69,132	375,896	66,164	923,615	67.3	449,788	387,309	303,618	476,312
	12 mos.	940	14,704,175	1,225,129	16,835,800	2,713,125	2,539,089	789,178	4,453,118	777,801	11,386,877	67.6	5,448,923	4,627,392	3,611,631	4,375,007

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
St. Louis Southwestern of Texas	Dec.	807	$458,349	$61,323	$573,954	$142,166	$128,872	$29,451	$259,556	$34,193	$597,876	104.2	—$23,922	—$55,421	—$21,546	$161,893
	12 mos.	807	6,112,920	665,661	7,370,725	1,928,352	1,399,822	342,034	2,989,071	403,736	7,107,694	96.4	263,031	—71,911	502,836	467,245
Seaboard Air Line	Dec.	4,306	3,507,190	909,906	4,973,570	708,629	1,057,452	231,703	1,768,307	227,845	4,017,420	80.8	956,150	686,978	557,019	1,294,212
	12 mos.	4,291	46,431,658	9,714,728	61,790,150	7,637,801	9,638,958	2,531,359	23,765,351	2,500,859	46,873,315	75.9	14,916,835	11,316,350	10,388,760	12,101,566
Southern Ry.	Dec.	6,771	7,946,318	2,396,707	11,421,148	1,300,725	2,069,695	249,534	3,970,401	388,359	8,065,126	70.6	3,356,022	2,612,547	2,422,251	2,661,706
	12 mos.	6,771	109,331,010	26,749,397	147,639,063	20,337,178	26,081,329	3,035,472	49,342,000	4,183,915	103,907,953	70.4	43,731,110	34,242,232	32,765,062	35,528,783
Alabama Great Southern	Dec.	314	619,831	179,760	850,857	20,476	149,014	22,481	284,290	21,510	500,735	58.9	350,122	294,756	319,064	308,622
	12 mos.	314	7,801,151	1,906,171	10,359,494	1,589,464	1,974,576	252,600	3,156,395	276,683	7,333,077	70.8	3,026,417	2,324,764	2,607,308	2,728,463
Cinn., New Orleans & Tex. Pacific	Dec.	338	1,154,453	321,265	1,586,734	222,155	384,635	38,025	488,501	64,099	1,212,118	76.4	374,616	306,906	267,439	361,430
	12 mos.	338	16,974,395	3,621,032	21,811,757	3,492,068	4,417,273	522,674	6,289,979	665,443	15,560,226	71.3	6,251,531	4,993,125	4,709,507	5,707,690
Georgia Southern & Florida	Dec.	401	278,505	139,383	465,381	72,268	72,572	6,854	150,869	6,373	315,814	67.9	149,567	130,435	121,277	169,180
	12 mos.	401	3,322,516	1,172,574	4,863,249	1,003,736	922,640	112,387	1,895,875	105,654	4,088,149	84.1	775,100	529,937	420,254	953,254
New Orleans & Northeastern	Dec.	204	267,452	83,559	385,701	41,909	65,136	11,460	135,231	15,502	273,502	70.9	112,199	64,144	22,820	206,849
	12 mos.	204	4,409,829	949,100	5,758,052	794,479	928,758	150,862	1,710,139	186,467	3,824,101	66.4	1,933,951	1,409,593	978,798	1,399,250
Northern Alabama	Dec.	110	75,175	9,127	87,150	14,345	4,272	2,675	34,510	2,984	58,784	67.5	28,366	22,841	1,984	31,204
	12 mos.	110	1,243,862	99,299	1,376,563	262,710	48,404	27,674	443,364	33,853	815,845	59.3	560,718	494,558	198,706	240,362
Southern Pacific	Dec.	8,933	10,987,506	3,455,356	16,266,649	1,869,045	2,578,182	371,333	5,621,752	651,503	11,415,791	70.2	4,850,858	3,459,483	3,285,569	3,371,434
	12 mos.	8,933	154,200,274	40,691,182	214,898,487	28,129,787	34,376,874	4,604,083	70,462,297	7,645,159	149,215,801	69.4	65,682,686	48,046,810	44,124,518	46,617,047
Southern Pacific Steamship Lines	Dec.	....	713,252	31,883	872,157	23,657	44,556	39,114	681,236	54,734	843,297	96.7	28,860	26,349	27,358	19,043
	12 mos.	....	9,493,544	528,618	12,057,310	223,576	2,289,834	216,923	7,637,631	467,404	10,835,368	89.9	1,221,942	1,159,493	1,178,111	1,511,794
Texas & New Orleans	Dec.	4,604	4,134,990	1,040,170	5,707,522	969,130	1,168,158	158,600	2,533,948	255,167	5,005,318	87.7	702,204	502,618	302,824	1,035,164
	12 mos.	4,574	52,922,816	12,021,128	70,789,608	12,618,728	14,064,598	1,964,537	26,388,746	3,164,886	58,128,022	82.1	12,661,586	9,015,366	6,289,343	7,654,404
Spokane, Portland & Seattle	Dec.	554	516,273	101,144	680,910	60,424	104,488	12,037	203,407	21,940	406,926	59.8	273,984	189,716	179,020	193,374
	12 mos.	554	6,955,767	1,260,518	8,932,623	1,173,439	1,185,740	134,060	2,520,807	271,631	5,344,425	59.8	3,588,198	2,603,170	2,454,087	2,281,607
Tennessee Central	Dec.	296	205,992	21,429	240,528	48,936	44,511	9,738	110,266	12,452	225,551	93.8	14,977	4,256	—6,879	17,060
	12 mos.	296	2,825,580	285,997	3,279,560	663,833	571,299	108,061	1,203,828	152,863	2,696,636	82.2	582,924	509,954	312,433	328,903
Terminal Railroad Ass'n of St. L.	Dec.	55	.....	.....	1,081,586	178,713	91,234	2,226	455,923	33,907	764,929	70.7	316,657	240,714	326,163	263,545
	12 mos.	55	.....	.....	13,270,086	2,261,960	1,183,595	26,813	5,312,349	343,334	9,164,967	69.1	4,105,119	2,970,335	3,944,360	4,439,633
Texas Mexican	Dec.	162	60,867	4,699	72,151	—15,869	7,961	4,477	20,631	7,227	17,792	24.7	54,359	45,763	46,020	—73,161
	12 mos.	162	1,091,613	74,181	1,280,757	232,082	237,471	47,668	498,629	74,802	1,081,920	84.5	198,837	126,456	37,369	422,534
Toledo, Peoria & Western	Dec.	239	122,721	2,761	132,004	22,549	15,572	9,071	53,866	7,993	109,051	82.6	22,953	22,953	17,272	14,306
	12 mos.	241	1,608,130	57,496	1,762,746	410,013	233,880	98,949	731,677	90,021	1,564,472	88.8	198,274	178,057	48,820	—127,196
Toledo Terminal	Dec.	28	.....	.....	93,115	1,625	15,750	584	47,415	13,347	78,721	84.5	14,394	24,447	52,510	18,646
	12 mos.	28	.....	.....	1,514,021	222,679	188,573	6,616	623,551	65,526	1,106,945	73.1	407,076	210,586	549,993	538,839
Trinity & Brazos Valley	Dec.	367	224,912	10,559	244,067	38,283	32,211	6,081	109,517	12,167	197,565	80.9	46,502	36,801	4,260	46,918
	12 mos.	367	2,634,024	112,911	2,836,351	563,244	388,990	65,973	1,185,420	144,260	2,290,093	80.7	546,258	452,323	151,926	—178,535
Ulster & Delaware	Dec.	128	23,584	104,072	246,615	8,280	13,074	1,320	38,659	4,882	66,215	26.8	180,400	174,450	173,152	—4,056
	12 mos.	128	501,335	337,550	1,331,568	211,550	186,535	19,211	581,655	60,823	1,059,774	79.6	271,794	202,594	154,417	31,269
Union Railroad of Penna.	Dec.	45	.....	.....	566,291	90,885	152,505	181	339,515	22,819	605,905	107.0	—39,614	—28,910	47,803	—28,539
	12 mos.	45	.....	.....	9,779,136	1,521,245	2,384,417	1,936	4,543,297	156,159	8,606,938	88.0	1,172,198	960,515	1,833,352	2,753,051
Union Pacific	Dec.	3,711	6,853,491	1,203,057	8,976,261	696,072	1,981,386	174,286	2,618,315	304,289	5,916,855	65.9	3,059,406	2,181,626	2,018,054	2,033,768
	12 mos.	3,713	88,615,831	15,581,062	113,383,608	12,766,419	22,530,503	2,099,706	29,988,980	3,756,751	73,253,234	64.6	40,148,374	31,467,303	27,574,669	27,852,065
Oregon Short Line	Dec.	2,539	2,338,678	348,379	2,908,614	283,673	528,377	51,013	803,128	119,819	1,841,392	63.3	1,067,222	769,527	473,865	462,488
	12 mos.	2,538	29,150,655	4,210,258	35,999,738	5,629,879	5,765,928	623,931	10,293,302	1,451,595	24,442,542	67.9	11,557,196	8,278,811	6,936,914	7,024,611
Oregon, Wash. R. R. & Nav. Co.	Dec.	2,237	1,718,837	340,323	2,313,450	253,649	347,123	72,044	869,050	119,261	1,701,181	73.5	612,269	385,787	247,450	329,395
	12 mos.	2,237	22,759,379	3,759,473	29,125,538	4,850,385	4,380,730	924,561	10,272,633	1,435,807	22,205,867	76.2	6,919,671	4,528,719	2,930,745	4,662,729
Los Angeles & Salt Lake	Dec.	1,209	1,358,704	352,269	1,938,170	387,774	371,483	69,830	671,987	79,317	1,667,345	86.0	270,825	115,797	53,249	118,179
	12 mos.	1,208	17,719,166	4,908,888	25,382,737	4,744,551	4,716,242	931,158	7,877,638	916,610	20,450,800	80.6	4,931,937	3,279,428	2,041,061	2,560,739
St. Joseph & Grand Island	Dec.	258	263,037	13,567	294,726	41,212	47,304	3,112	106,416	16,621	214,665	72.8	80,061	58,678	43,536	30,886
	12 mos.	258	3,138,460	158,927	3,521,309	661,763	508,346	36,669	1,217,792	179,515	2,604,085	74.0	917,224	694,287	505,908	488,375
Utah	Dec.	111	228,151	.....	228,386	29,140	40,193	424	55,166	925	125,848	55.1	102,538	55,848	33,314	57,959
	12 mos.	111	1,811,360	36	1,813,208	250,774	451,504	4,516	355,030	63,667	1,125,491	62.1	687,717	544,055	451,958	399,769
Virginian	Dec.	545	1,336,135	44,498	1,485,084	111,948	262,917	13,424	325,895	31,679	741,511	49.9	743,573	653,557	723,231	151,366
	12 mos.	545	20,095,080	614,093	22,114,785	2,377,652	4,309,586	166,595	4,424,255	402,802	11,603,491	52.5	10,511,294	8,871,865	9,543,203	9,856,725
Wabash	Dec.	2,524	3,962,205	666,952	5,078,725	528,709	973,951	174,416	2,138,260	179,869	4,000,694	78.8	1,078,031	1,080,645	804,497	1,320,968
	12 mos.	2,524	53,992,505	8,153,606	67,108,154	9,340,820	11,880,995	1,969,161	25,924,499	2,193,048	51,379,147	76.6	15,729,007	12,931,640	9,611,677	12,562,083
Ann Arbor	Dec.	293	363,683	26,298	416,678	32,782	97,761	13,406	180,597	12,498	336,933	80.9	79,745	57,602	42,173	32,507
	12 mos.	293	5,129,192	262,608	5,615,112	663,500	1,199,675	154,348	2,194,564	139,705	4,332,331	77.2	1,282,781	985,804	780,182	969,493
Western Maryland	Dec.	804	1,617,207	35,892	1,699,713	196,115	339,726	41,435	479,497	52,808	1,117,424	65.7	582,289	501,164	544,978	592,621
	12 mos.	804	20,636,903	503,282	21,866,171	3,289,672	4,552,230	473,849	6,076,838	557,940	14,993,312	68.6	6,872,859	5,691,734	6,131,593	6,075,223
Western Pacific	Dec.	1,042	906,158	80,836	1,068,195	183,166	215,557	52,012	433,826	47,973	958,241	89.7	109,954	—12,867	55,373	177,351
	12 mos.	1,042	13,424,393	1,672,642	16,433,463	3,084,060	2,949,421	555,273	5,393,342	542,459	13,125,069	79.9	3,308,394	1,804,114	2,321,483	4,337,205
Wheeling & Lake Erie	Dec.	511	1,002,083	31,258	1,114,754	124,809	338,283	44,085	410,433	67,676	982,619	88.1	132,135	55,162	60,962	180,874
	12 mos.	511	16,468,775	370,985	18,129,586	2,374,999	4,653,947	419,437	5,684,225	568,870	13,716,571	75.7	4,413,015	2,948,769	3,048,020	4,398,877

News of the Week

(*Continued from page 373*)

bill was first introduced in the session of 1924 it was to provide money to the Canadian National Railways to pay its share of the line. George P. Graham, then Minister of Railways and Canals, explaining the measure at that time recalled that in 1919 when a conflict of railway routes between the two railways was discussed before the Dominion Railway Board the Board ruled that this should become a joint line with equal rights to each railway and that the parties should make an agreement covering the same. One purpose of the line is to open a further area of the Drumheller coal fields.

The second bill asks Parliament for extension of time within which to complete an extension of the St. John & Quebec Railway in New Brunswick, and better known as the St. John Valley Railway.

It is generally expected, though, thaat this line will never be built because of lack of prospective traffic.

C. P. R. Completes Flood Reconstruction

It is announced by the Canadian Pacific that after two months of strenuous work following temporary rehabilitation, the lines of that road running through the Eastern Townships of Quebec and in New England have been repaired and service restored to normal.

The extent of the flood havoc can be gauged by the fact that no less than 295 miles of roadbed was subjected to flood action, of which considerable portions were destroyed. On the Lyndonville subdivision, which was the most seriously damaged 25 miles out of a total of 60 miles of track were washed out.

As soon as the Maine Central, which also was affected by the flood, was connected through to St. Johnsbury, Vt., a train load of repair equipment was rushed to the scene and labor gangs were drawn from all possible sources to cope with the situation. Lumber of all dimensions and kinds was purchased from local mills for use in the reconstruction work. Before work trains could be run over the lines the washed-out places had to be blocked up and the track made safe.

The most serious aspect was the damage caused throughout to the company's bridges. Between Newport and Wells river no less than 53 bridges were affected. However, at only one of these bridges were the steel girders affected, and that was just south of Westburke.

The largest single washout was at Passumpsic, where a trestle was constructed 460 feet long and a maximum of 32 ft. high. This trestle has since been filled.

The railway stations also suffered, those at Inwood and Centervale, Vt., to such an extent that they were beyond repair. In fact at Inwood the whole station ground was scoured out down to bare rock.

At the present time, although there is still a certain amount of permanent work requiring attention, the regular schedule of train service to the Eastern Townships and to connecting points throughout the New England states is being efficiently maintained as before the flood.

Train Control Investigation

Hearings in connection with the Interstate Commerce Commission's investigation of automatic train control devices and block signal systems are to begin at Washington February 27 before Division 6 Commissioners Eastman, Esch and McManamy. Respondent railroads will be given opportunity to present such evidence and data, not covered by their responses to the questionaire issued by commission, as they may wish to bring to its attention, having in mind the fact that the purpose of the inquiry is to determine whether and to what extent existing installations now in use are adequate and, if found inadequate, what additional installations should be made to the end that increased safety in train operation may be obtained.

Train control matters heretofore have been handled by Division 1 of the Commission, but by a realignment of the Commission's organization they have now been transferred to Division 6 with Commissioner Eastman as chairman.

A Trunk Too Big For the Baggage Car

An old-time advertisement; before the Canadian National had been thought of and before the Lehigh Valley and the Lackawanna had made love to Buffalo. The Grand Trunk first ran trains to and from Chicago about 1880.

Traffic

The Interstate Commerce Commission has again postponed the effective date of its orders in the consolidated southwestern rate cases from April 3 to May 16.

The New York, Chicago & St. Louis has abandoned its Broadway station in Cleveland, Ohio, and is now using the West Twenty-fifth street station for passengers; this because of construction work incident to the development of the Cleveland Union Terminals Company.

A bill to amend the interstate commerce act to permit common carriers to give free carriage or reduced rates to members of state commissions exercising jurisdiction over common carriers has been introduced in the Senate, as S.3,000, by Senator Smoot, of Utah.

The Interstate Commerce Commission has assigned Part 2 of its freight rate investigation (class rates in Western Trunk Line territory and related cases) for further hearing at Chicago beginning on April 5 before Commissioner McManamy and Examiners Koebel and Paulson. It is the expectation of the commission that this will be the final hearing.

"Prominent Business Men of Pittsburgh," according to press dispatches, have applied for a charter to operate passenger airplanes between Pittsburgh and New York; and it is said that the sum of $150,000 has already been subscribed. It is proposed to have the planes leave Pittsburgh late in the afternoon and go through to New York in 3½ hours.

The Interstate Commerce Commission has announced a postponement to March 28 of its order in the southeastern sugar rate investigation case, in which it prescribed a revision of rates on sugar, in carloads, to and from points in the South. Petitions asking for a postponement and modification of the order had been filed by the southern, Trunk Line and New England railroads.

The Secretary of War has directed General T. Q. Ashburn, chairman of the Inland Waterways Corporation, to have survey made to determine the amount of traffic available, the cost of equipment and terminals, the operating cost, the rail connections and affiliations and similar information necessary to a sound decision regarding the desirability of extending the activities of the corporation by initiating barge transportation on the Missouri river.

D. L. & W. Decorates Traffic Officers

The annual conference of freight traffic officers and representatives of the Lackawanna was held in New York on February 1-3. On this occasion President Davis presented C. R. Hartshorn, commercial agent at Toledo, O., and Hervey Love, commercial agent at

Easton, Pa., with handsomely and suitably engraved gold medals in recognition for attaining the highest percentages of increased business during 1927.

Live Stock Investigation

The thirteenth hearing before representatives of the Interstate Commerce Commission in the investigation of live stock rates in the western district, opened on February 6 at Chicago. The first hearing was held at Salt Lake City, last July, since which testimony has been taken at the following points in the order given; Portland, Ore., Los Angeles, Calif., Chicago, St. Paul, Minn., Washington, D. C., again at Los Angeles, Ft. Worth, Texas, again at Chicago, then Washington, St. Paul and again at Washington. The commission plans to adjourn at Chicago on February 14 and reconvene at Kansas City on the following day, after which no further testimony will be taken.

At the opening of the Chicago session, Kenneth F. Burgess, (C. B. & Q.) speaking for the railways in Western Trunk Line territory, stated that wage increases have been made on the Western railroads which amount to $27,000,000 annually, under the operation of the present national Railway Labor Act, passed May 20, 1926. In addition to the large increases already granted, these roads are now confronted with wage demands from their trainmen and enginemen which amount to more than $32,000,000 a year.

"In 1927," he continued, "the net earnings of the Western lines showed a decline of $42,000,000 or of almost 11 per cent, below the 1926 level. One of the largest causes contributing to this decline has been the great increase in wages which the Western roads have been compelled to pay to their employees, through mediation and arbitration. The present Western railway wage levels either closely approximate or exceed the post-war peak wage scales which were fixed by the United States Railroad Labor Board in 1920. In Western Trunk Line territory alone, net earnings in 1927 showed a drop of almost $9,000,000 below 1926; the wage increases which these same roads have been required to make amount to $6,000,000 annually.

"Then, too, the taxes of the Western lines have been increasing in alarming proportions. In 1926 they showed an increase of almost $28,000,000 over the corresponding total for 1921. The two factors of increased wages and higher taxes must largely determine the future level of freight rates in Western territory, if the public is to continue to receive adequate railroad transportation."

THE ROUNDHOUSE, the master mechanic's office and other buildings of the Baltimore & Ohio at Connellsville, Pa., were destroyed by fire on February 2; estimated loss, including damage to 26 locomotives, $100,000.

AMERICAN FIRST CORPORATION (New York City) is the name of a concern that has been chartered in the state of New York to operate airships. The attorney for the company is W. H. Boyes, Asbury Park, N. J.

Equipment and Supplies

Locomotives

BOSTON & ALBANY.—See New York Central.

THE TENNESSEE COPPER COMPANY has ordered 1 six-wheel switching locomotive, from the American Locomotive Company.

THE SINCLAIR REFINING COMPANY has ordered a six-wheel switching locomotive from the Baldwin Locomotive Works.

THE NEW YORK CENTRAL is inquiring for five 4-6-4 type locomotives and five 4-6-6 type locomotives, for the Boston & Albany.

THE NORTHERN PACIFIC has ordered one 2-8-8-4 articulated type locomotive from the American Locomotive Company. The total weight in working order of this engine will be 710,000 lb. and, including tender loaded, 1,802,500 lb. Each engine unit will have two simple cylinders, 26 in. by 32 in., operating at a maximum cut-off of 70 per cent. The driving wheels will be 63 in. in diameter. The boiler will carry 250 lb. boiler pressure and will have a firebox with approximately 182 sq. ft. of grate area. The tractive force, including booster, will be 150,400 lb. and the locomotive is calculated to develop 6,000 indicated horsepower.

Freight Cars

THE STATE RAILWAYS OF URUGUAY. See item under passenger car heading.

THE ANGLO-CHILE NITRATE COMPANY has ordered 50 flat cars from the American Car & Foundry Company.

THE ILLINOIS CENTRAL has ordered two air-dump cars from the Differential Steel Car Company.

THE AMTORG TRADING CORPORATION has ordered 200 dump cars of 6 cu. yd. capacity from the American Car & Foundry Company.

THE SWIFT COMPANY has ordered 300 steel underframes for refrigerator cars from the Bettendorf Company. Inquiry for this equipment was reported in the *Railway Age* of December 31.

THE FRUIT GROWERS' EXPRESS has ordered 152 refrigerator car underframes from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 14.

THE ST. LOUIS-SOUTHWESTERN has ordered six caboose car underframes from the Virginia Bridge & Iron Company. Inquiry for this equipment was reported in the *Railway Age* of January 21.

THE ST. LOUIS-SAN FRANCISCO has ordered 1000 steel frame single sheathed 50 ton box cars and 500 steel 55 ton hopper cars from the American Car & Foundry Company; 500 hopper cars and 500 automobile cars from the Pullman Car & Manufacturing Corporation; 500 hopper cars, 500 flat cars and 500 box cars from the General American Car Company. Inquiry for this equipment was reported in the *Railway Age* of December 31.

Passenger Cars

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for one gas-electric rail motor coach.

THE LONG ISLAND has ordered two combination baggage and mail cars from the American Car & Foundry Company.

THE MANITOBA POWER COMPANY, Winnipeg, Man., has ordered one 52-ft. single-unit gas-electric rail motor car from the Mack Trucks, Inc.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 10 baggage cars, 6 baggage and mail cars, 10 suburban cars and 16 coaches.

THE READING COMPANY has ordered one double power plant combination passenger, baggage and mail gas-electric rail motor car, from the J. G. Brill Company.

THE CHICAGO & ALTON has ordered 7 baggage and mail cars and 2 postal cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 14.

THE STATE RAILWAYS OF URUGUAY are inquiring for bids for the construction of the following equipment:

3 first class passenger coaches
1 first class Pullman coach
2 dining cars, first class
2 baggage cars
10 box cars
32 stock cars
1 auxiliary crane

Bids should be received not later than May 1, 1928, and inquiries should be addressed to José Figueira, secretary, Directorio de Ferrocarriles y Tranvías del Estado, Montevideo, Uruguay.

Machinery and Tools

THE CHICAGO, BURLINGTON & QUINCY is inquiring for two double-end axle lathes.

THE SOUTHERN has ordered one pile driver from the McMyler Interstate Company.

THE ST. LOUIS-SAN FRANCISCO is inquiring for the following machine tools:

1 Motor driven traverse gaining machine
1 Micro internal grinder complete, with 2 sets of grinding wheels
1 electric truck, 3,000 lbs. capacity
1 recording pyrometer and temperature control
1 combination journal truing and axle lathe
1 crusher and pulverizer
1 90 in. heavy duty driving wheel lathe
1 motor driven pipe treading machine
1 Motor driven band saw for cutting metal
1 Heavy pattern crank shaper
1 driving wheel press
1 Universal hollow hexagon turret lathe
3 Cyclone high speed chain hoists
1 Independent pneumatic tool wood boring machine
1 100 ton spring testing machine
1 power punch and shear
2 Automatic temperature controls thermo couple type

Supply Trade

F. A. Lawler, formerly manager of the Chicago branch of the **Crucible Steel Company** of America has been elected executive vice-president of the **Ziv Steel and Wire Company,** Chicago.

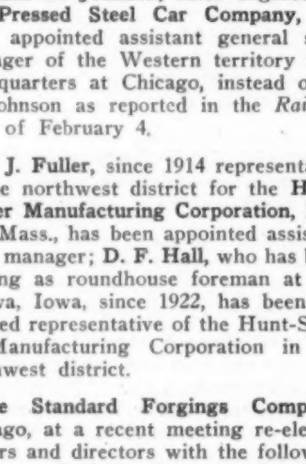
W. E. Greenwood assistant manager of the railway traffic and sales department of the **Texas Company,** New York City, has been appointed manager succeeding William Jervis, resigned.

Frank L. Johnson, sales engineer of the **Pressed Steel Car Company,** has been appointed assistant general sales manager of the Western territory with headquarters at Chicago, instead of E. L. Johnson as reported in the *Railway Age* of February 4.

E. J. Fuller, since 1914 representative in the northwest district for the **Hunt-Spiller Manufacturing Corporation,** Boston, Mass., has been appointed assistant sales manager; **D. F. Hall,** who has been serving as roundhouse foreman at Ottumwa, Iowa, since 1922, has been appointed representative of the Hunt-Spiller Manufacturing Corporation in the northwest district.

The Standard Forgings Company, Chicago, at a recent meeting re-elected officers and directors with the following changes: **C. R. Lewis** was made executive vice-president in addition to duties of general manager of sales; **A. C. Stockton,** formerly vice-president and comptroller was elected vice-president, treasurer and secretary in place of **L. C. Ryan,** formerly treasurer and **C. E. Jernberg,** formerly secretary; both having resigned to engage in other business.

George E. Ladd, economic geologist of the Bureau of Public Roads of the U. S. Department of Agriculture, has resigned to become consulting geologist



George E. Ladd

of the **Armco Culvert Manufacturers Association** with headquarters at Middletown, Ohio. He was born on July 23, 1864, at Haverhill, Mass., and graduated from Harvard University in 1887, after which he studied at universities in Germany. From 1887 to 1892, he was associated with the United States, Missouri and Texas Geological Surveys and from the latter date until 1894 he was assistant in geology at Harvard University. In the latter year he resigned to become assistant geologist and chemist for the Georgia Geological Survey and in 1896 was appointed director and professor of geology and mining of the school of mines and metallurgy of the University of Missouri, which position he held until 1908. In this year he was appointed president of the Oklahoma school of mines and metallurgy, which position he held until 1913 when he became president of the New Mexico College of Agriculture and Mechanical Arts. In 1917 he became economic geologist for the Bureau of Public Roads of the U. S. Department of Agriculture.

George A. Nicol, Jr., general manager of the railroad and government departments of the **Johns-Manville Corporation,** with headquarters at New York, has been elected a vice-president. He

George A. Nicol, Jr.

was born in Providence, R. I., and educated at Mount Pleasant Academy, English High School and Rhode Island School of Design. Mr. Nicols served a special apprenticeship at the Rhode Island Locomotive Works and subsequently was a locomotive designer with the American Locomotive Company, going to Louisville, Ky., in March 1904, with the Louisville & Nashville as locomotive designer and later specializing in car designs. From August 1905 he was with the Baltimore & Ohio as designing engineer in the mechanical department at Baltimore, Md., until January 1909, at which time he entered the services of the H. W. Johns-Manville Company, now the Johns-Manville Corporation, as railroad representative. Three years later he was transferred to the executive headquarters at New York as eastern assistant manager of the railroad department, and in 1920 was promoted to eastern manager of the same department. In 1924 he was appointed general manager of the railroad and government departments.

A. L. Greenabaum for the past eight years general sales manager of the **O. F. Jordan Company,** East Chicago, Ind., has been elected vice-president. Mr. Greenabaum previous to his entering

A. L. Greenabaum

service with the O. F. Jordan Company in 1920 had served in the operating department of the Rock Island System. He is also vice-president of the National Railway Appliances Association.

Laurence C. Ryan, vice-president and treasurer of the **Standard Forgings Company,** and the **St. Louis Forgings Company,** has resigned to participate in the incorporation and organization of the Industrial Steel & Supply Company, 20 E. Jackson Boulevard, Chicago with John T. McEnroe, formerly vice-president of the Benjamin Colitz Company. The new concern will engage in the purchase and sale of industrial and railway iron and steel scrap and other by-products, as well as industrial and railway supplies.

Standard Stoker Company, Inc. Buys Assets of Locomotive Stoker Company

On February 1 the Standard Stoker Company, Inc., New York, purchased and took over the patents of the Locomotive Stoker Company covering stokers and coal pushers. There were included also in the purchase certain assets necessary to operating under the patents, including the inventories of finished materials and goods in process and the fixed assets of the plant of the Locomotive Stoker Company at Pittsburgh.

The Standard Stoker Company, Inc., will manufacture at its Pittsburgh plant, and will supply without interruption, the stokers and coal pushers, and the parts for these devices, which have heretofore been manufactured by the Locomotive Stoker Company.

The Erie plant of the Standard Stoker Company, Inc., will continue to supply the stokers and repair parts of the same types as hitherto.

Obituary

Fendall G. Winston, one of the founders and president from 1901 to 1904 of the Winston Bros. Construction Company, died on February 2 at Minneapolis, Min., following a paralytic stroke.

Construction

ALABAMA, TENNESSEE & NORTHERN.—John T. Cochrane, president, has announced plans of this company for the construction of a yard, a locomotive terminal and a freight station at Mobile, Ala., following the acquisition of a 99-year lease on an 18-acre tract of land at the State docks. The yard will have a capacity of about 600 cars. Other construction will include a roundhouse, a coaling station, a freight station, team tracks, an automobile unloading platform and live stock pens. The total cost of the project is estimated at $40,000.

DENVER & RIO GRANDE WESTERN.—Bids are being received for the enlargement of three tunnels on La Veta Pass between Pueblo, Colo., and Alamosa, for the relining of the tunnel at Beaver Tail, each of Grand Junction, Colo., and for the construction of a concrete tunnel in Glenwood Canyon, Colo., to overcome trouble from mud slides.

MISSOURI PACIFIC.—L. W. Baldwin, president, has authorized the expenditure of $1,100,000 for the protection of the line between Little Rock, Ark., and Texarkana against floods, construction to be started this Spring and to be finished within about five months. The work will consist of raising more than 13 miles of the line through territory heretofore subjected to floods, bringing the track for the entire 145 miles above flood level and avoiding future interference with traffic. The track at various points will be raised an average of 5 ft. with a maximum raise of 9 ft. requiring more than 565,000 cu. yd. of earth and rock ballast. Provision has also been made for the raising of more than 3,100 ft. of concrete and of steel bridges.

NEW YORK CENTRAL.—A contract has been let to Alvord & Swift of New York for the installation of a ventilating system in the battery room of sub-station 1-B, Grand Central Terminal, New York.

NEW YORK, CHICAGO & ST. LOUIS.—A contract for the installation of two electric cinder handling plants at Frankfort, Ind., has been awarded to Roberts & Schaefer Company, Chicago.

PENNSYLVANIA.—Sinclair & Grigg of Philadelphia, Pa., have been let a contract for concrete pile foundations for the proposed cold storage warehouse at the Pennsylvania Produce Terminal at Philadelphia at a cost of $100,000.

SEABOARD AIR LINE.—A contract has been let to the C. V. York Company of Releigh, N. C., for the construction of an office building at Howells, Ga., to cost approximately $15,000.

Railway Finance

ALABAMA GREAT SOUTHERN.—*Bonds.*—This company has filed with the Interstate Commerce Commission a supplemental application for authority to issue and sell to J. P. Morgan & Co., at 97 and interest $5,206,000 of first consolidated mortgage 4 per cent bonds, the authentication and delivery of which was authorized by the commission on November 16.

BOSTON & MAINE.—*Correction.*—The preliminary earnings statement for 1927 recently issued by the Boston & Maine showed net income after interest and other charges of $3,373,293 as compared with $6,573,404 in 1926. The 1927 net income was sufficient to yield a balance of $325,000 after dividend requirements on the prior preference and first preferred stocks. It was erroneously reported in an item in last week's issue that the amount of net income in 1927 was insufficient to cover the dividend requirements on the prior preference and first preferred issues.

An official statement regarding the 1927 earnings reads as follows:

"The November floods which damaged 946 miles of Boston & Maine roadway and bridges with consequent reduction in traffic and greatly increased operating expenses, together with some extraordinary December adjustments, resulted in a net income for 1927 of $3,373,293 compared with net income of $6,573,404 in 1926. This leaves a surplus of $324,739 after payment of 1927 dividends on prior preference and first preferred stock outstanding.

"The monthly statement covering December and the twelve month takes inth the accounts all of the Boston & Maine's flood damage already repaired and set up a reserve of $600,000 for permanent repairs necessarily delayed until late winter and spring. Besides the usual December adjustments for inventory balancing, obsolete material, etc., $715,000 was charged to operating expenses, in accordance with Interstate Commerce Commission requirements on account of the retirement of the old North Station. It is stated that there will be no further substantial charges to operating expenses on account of this work, and that, from January 1, 1928, the figures will be on a normal basis.

"The distortion of the figures for November and December caused by the floods, together with the year-end adjustments in the December account, prevent any true comparison with the figures for the previous year, it is stated."

CENTRAL VERMONT.—*Receivers' Certificates.*—The Interstate Commerce Commission has approved an issue of $5,000,000 receivers' certificates to be sold to Dillon, Read & Co., the highest of two bidders, at 99.53 per cent of par. The proceeds are to be used for repairing flood damages.

CHESAPEAKE & OHIO.—*Stockholders Protective Committee Criticizes Policies.*—The Stockholders Protective Committee, George S. Kemp, chairman, has given circulation to an extended criticism of the management's policies, having particular reference to the proposals to acquire control of the Erie. Excerpts from the committee's statement follow:

"Chesapeake & Ohio for the year 1927 occupies a unique position among the large systems in the United States in that it shows the largest per share earnings, and it is one of the four or five of the large systems whose Net Revenue from Railway Operations, viz: $43,447,000, shows an increase over 1926, to-wit: $237,000.

"Had Chesapeake & Ohio's directors refrained from investing $22,538,391 in Erie's shares, and this sum invested at 6 per cent (which would be an easy task for the C. & O. since it has many improvements to make, all of which would net from 15% to 140% per annum according to official estimates) there would have been a saving of approximately $1,000,000, and this $1,000,000 added to its net income for the year 1927 would have shown about $300,000 in excess of net income for 1926.

"During the year 1926 Norfolk & Western showed $25.75 per share earned on its Common stock while Chesapeake showed $24.64.

"For the year 1927 Chesapeake will show $24.23, plus its equity in Hocking Valley's undistributed net income, or say 2 per cent additional, making total earnings equivalent to $26.23, against $21.23 shown by Norfolk & Western for 1927.

"Since Erie received about $4,000,000 from its coal properties during the year 1927, and including this amount, only showed $3,512,650 net income before sinking fund requirements, it can readily be seen that in the operation of its rail lines, Erie showed a deficit of $487,350; therefore, in this connection, Erie failed to earn anything on its common stock and also failed to earn anything on its $64,000,000 Preferred stocks; did not earn its sinking and reserve fund requirements as estimated by Mr. Harahan last June to be $1,470,000 for the year 1927, and even failed to earn its fixed charges (interest on bonds, etc.) by $487,350. Is our road being asked to buy anthracite coal mines, or a steam railroad? Does not this showing tend, in a measure, to convince the student of finance why those in control of Chesapeake & Ohio are trying to unload their Erie Common stock on the C. & O. at $34.50 per share when it is quoted in the open market at above $60 per share?"

CHESAPEAKE & OHIO.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a ferry between South Portsmouth, Ky. and Portsmouth, Ohio, following the construction of a new highway bridge. The company proposes to establish a transfer service for the transportation of both passengers and freight across the bridge.

CHICAGO, MILWAUKEE & ST. PAUL.—*Receivership Fees.*—Judge Wilkerson has ordered the payment of the following salaries and fees in connection with the recently terminated receivership: $100,000 to each of the receivers—H. E. Bryam, Mark W. Potter and Edward J. Braundage. They also got smaller sums for other duties. The largest single item is $250,000 compensation to Davis, Polk, Wardwell, Gardiner & Reed, of New York, counsel to the trustees in the receivership and foreclosure litigation.

Others are H. H. Field, general counsel to the receivers, $20,000; O. W. Dynes, $20,000; Winston, Strawn & Shaw, special counsel, $19,000; Hornblower, Miller & Garrison, New York, $30,000; W. K. Sparrow, special finance officer, $35,000; Stewart & Shearer, New York, $75,000; Taylor, Blanc, Capron & Marsh, New York, $40,000; Bankers Trust Company, $25,000; White & Chase, New York, $40,000, and the United Mortgage & Trust Company, $30,000.

Receivership Expenses—Judge James H. Wilkerson of the United States District Court at Chicago on February 4 ordered the payment of nearly $1,500,000 for services and expenses incident to the receivership and the reorganization of the company as the Chicago, Milwaukee, St. Paul & Pacific. The three receivers, H. E. Byram, Mark W. Potter and Edward J. Brundage, were each allotted $100,000 for

their receivership services in addition to their salaries during that period. Other officers of the railroad to whom payments were authorized by the court are H. H. Field, general counsel to the receivers, and O. W. Dynes, general solicitor to the receivers, who were awarded $20,000 each, and W. W. K. Sparrow, chief financial and accounting officer for the receivers, who was awarded $35,000 for special services. The special master in chancery, Herbert A. Lundahl, was granted $10,000 for his services in consummating the sale of the property and $25,000 for his services in passing upon claims. The largest award by the court was made to Davis, Polk, Wardell, Gardiner and Reed, attorneys of New York, for services as counsel for the Guaranty Trust Company, New York, and Merrel P. Callaway, trustees under the general and refunding mortgage of the company. They were granted $250,000. Winston, Strawn and Shaw of Chicago were awarded $175,000 for services as special counsel to the receivers, in addition to the regular monthly allowances. Other major allowances by the court were as follows: Guaranty Trust Company, New York, $125,000, and Merrel P. Callaway, $25,000, for services as trustees; Tenney, Harding, Sherman and Rogers, Chicago, $75,000 for services as local counsel for the trustees; the United States Trust Company, New York, and Edward W. Sheldon, $50,000 for services as trustees under the first mortgage of the Chicago, Milwaukee & Puget Sound; Stewart and Shearer, New York, $75,000 for services as counsel to the aforementioned trustees; Honnblower, Miller and Harrison, New York, $30,000 for special services as counsel to the receivers in New York. A number of other attorneys and trust companies were awarded amounts varying from $15,000 to $42,500 for their services under particular indentures. The court directed the Chicago, Milwaukee St. Paul & Pacific to make the payments under this order within 10 days after its issuance, the amounts to be considered as part of the purchase price of the property formerly owned by the Chicago, Milwaukee & St. Paul.

CHICAGO & WESTERN INDIANA.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of $176,000 consolidated 4 per cent mortgage bonds, to be delivered to the tenant carriers in payment of sinking-fund advances.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—*Lease of Cincinnati Southern Opposed by Taxpayer.*—Eli G. Frankenstein, a taxpayer of Cincinnati, and as such claiming to be in the position of aminority stockholder of the Cincinnati Southern, owned by the city, has filed with the Interstate Commerce Commission a brief asking it not to approve this company's application for authority for a new extended lease of the property of the Cincinnati Southern for 99 years, on the ground that the proposed increased rental is inadequate.

DELAWARE & HUDSON.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by purchase of additional stock of the Ticonderoga, which operates 4.49 miles of line from a connection with the D. & H. to Ticonderoga, N. Y.

DULUTH, SOUTH SHORE & ATLANTIC.—*Abandonment.* — The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch extending from Bessemer Junction to Bessemer in Gogebic County, Mich., 2.3 miles.

GAINESVILLE & NORTHWESTERN.—*Abandonment.* — The Interstate Commerce Commission has issued a certificate authorizing this company to abandon its interstate and foreign commerce, the Helen-Robertstown segment of its line in White County, Ga., 1.5 miles; reason, lack of traffic.

GREENBRIER CHEAT & ELK.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing this company, which was recently acquired by the Chesapeake & Ohio, to abandon operation of that part of its line between Spruce and Cass, Pocahontas County, W. Va., 8 miles. The line will be turned over to the West Virginia Pulp & Paper Company, and used by it for the logging operations of the latter, but will no longer be operated in interstate and foreign commerce.

ILLINOIS TERMINAL.—*Acquisition.*—This company, which is now engaged in building an extension from Le Claire, Ill., to O'Fallon, has applied to the Interstate Commerce Commission for authority to acquire control by lease of the St. Louis, Troy & Eastern, the St. Louis & Illinois Belt, the St. Louis Electric Terminal, and the main division of Illinois Traction, Inc. The latter operates about 420 miles of electric railway in Illinois and the others operate 43 miles. The application says that the Illinois Power & Light Company owns all the capital stock of the companies to be leased and has contracted to purchase the stock of the applicant on condition that the acquisition of control of the others be duly authorized and consummated.

MISSOURI-KANSAS-TEXAS. — *Dividend Increase.*—Directors have declared a quarterly dividend of $1.75 per share on the preferred stock, payable March 31 to holders of record on March 13. This has the effect of putting this issue on a 7 per cent annual basis. Dividends on the preferred stock were begun at a 5 per cent annual rate in February, 1925 and the rate was increased to 6 per cent in May, 1926. The dividends become cumulative at the 7 per cent rate on January 1, 1928.

MOBILE & OHIO.—*Asks Bids.*—This company received bids on February 3 on $1,620,000 4 per cent equipment trust certificates, series Q, covering the purchase of equipment having a total cost of $2,050,784.

NASHVILLE, CHATTANOOGA & ST. LOUIS. *Bonds Authorized.*—The Interstate Commerce Commission has authorized an issue of $17,100,000 of first mortgage 4 per cent bonds, to be sold at not less than 94.84 and interest.

NEW MEXICO CENTRAL.—*Abandonment*—The Interstate Commerce Commission has made public a report by Examiner Thomas F. Sullivan recommending that the commission issue a certificate authorizing the abandonment of portions of the line, from Torrance to Willard, Tex., 36 miles, and from Santa Fe to Kennedy, 21.8 miles.

PARIS-ORLEANS.—*Refunding.* — The first public offering of French Securities in the American market since the lifting of the embargo against French loans by the State Department on January 15, 1928, will be undertaken shortly with the offering of a new issue of $10,750,000 Paris-Orleans Railroad Co., 40-year 5½ per cent bonds.

The proceeds from the sale of this issue will be used for the retirement of all of the present 7 per cent bonds of the Paris-Orleans. The 7 per cent bonds will be refunded on the next callable date, September 1, 1928.

The syndicate which will make the offering of the new issue next week will be the same as that which offered the 7 per cent bonds several years ago; namely, Brown Bros. & Co., A. Iselin & Co., Halsey, Stuart & Co., Inc., and Hemphill, Noyes & Co.

RUSSIAN SOVIET GOVERNMENT.—*State Department Objects.*—Advertisements by the Chase National Bank of New York that it would pay interest and principal in dollars on the new Soviet Railway 9 per cent bonds are understood to be the reason for the following statement issued by the State Department:

"The department objects to financial arrangements involving the flotation of a loan in the United States or the employment of credit for the purpose of making an advance to the Soviet regime. In accordance with this policy the department does not view with favor financial arrangements designed to facilitate in any way the sale of Soviet bonds in the United States. The department is confident that the banks and financial institutions will co-operate with the government in carrying out this policy."

SAN LUIS VALLEY SOUTHERN.— *Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to purchase the line of the San Luis Southern, now in receivership, and to issue $199,950 of stock and $100,000 of first mortgage bonds for the purpose. The line extends from Blanca to Jaroso, Colo., 31 miles.

SEABOARD AIR LINE.—*Bonds Authorized.*—The Interstate Commerce Commission has authorized the issuance of $1,102,000 first and consolidated mortgage bonds, series A, to be pledged as security for short term notes.

SOUTHERN.—*Equipment Trusts Sold.*—The First National Bank of New York and Salomon Brothers & Hurtzler have announced an offering of $9,840,000 4 per cent equipment trust certificates, series BB, at prices giving yields of 4 to 4.15 per cent, according to maturity.

SOUTHERN PACIFIC—*Bonds*—This company has applied to the Interstate Commerce Commission for authority to issue

and sell $29,400,000 of 40-year 4½ per cent bonds, to retire a like amount of 5 per cent bonds which have been called for redemption at par and accrued interest on May 1. It is proposed to sell the bonds to Kuhn, Loeb & Co., at 97¼ and interest.

ST. LOUIS SOUTHWESTERN.—*Stockholders Protective Committee.* — Announcement was made by Walter E. Meyer of New York on February 2 of the organization of a protective committee of the preferred and common stockholders. The membership of the committee is as follows:

Ex-judge William N. Cohen; Harry E. Ward, president of the American Exchange-Irving Trust Company; Arthur M. Hess, Alan Fox, Leo Wallerstein, and Mr. Chairman.

In connection with this announcement, Mr. Meyer issued a statement criticizing the manner in which control of the St. Louis Southwestern by the Kansas City Southern interests has been continued although the Interstate Commerce Commission ruled adversely. Mr. Meyer suggests that proceedings should be inaugurated under the Clayton Act. His statement follows:

"The applications of the Kansas City Southern to acquire control of Missouri-Kansas-Texas, and of Missouri-Kansas-Texas to acquire control of St. Louis Southwestern, known as the Loree plan, were denied by the Interstate Commerce Commission on May 19, 1927. Within a week thereafter Mr. Loree made the announcement that new applications would be filed with the commission within ten days. Over eight months have gone by but no new applications have been filed. If applications are filed, it is believed, they will have little chance of success. It would appear that it was the intention of the commission by its report to definitely and finally dispose of the applications.

"In contrast to the applications in the Nickel Plate and other cases, Mr. Loree and his associates failed to obtain a favorable ruling from the commission that the grouping of Kansas City Southern, Missouri-Kansas-Texas, and St. Louis Southwestern was in the public interest from a transportation standpoint. The grouping met with serious opposition. The Railroad Commission of Texas recommended that the applications be denied, giving as reasons, among others, that the roads to the grouping were competitive and that the Texas communities served by the roads needed their competition.

"The Interstate Commerce Commission also objected to the financial plan by which funds of the three roads were employed in the purchase of securities in advance of authority from the commission. The commission intimated very strongly that acquisitions of stock by competitors in advance of authorization from the commission 'constituted violations of the Clayton Anti-Trust Act and perhaps also of the Sherman Act.' The failure to provide terms for the protection of minority stockholders and to make provision for the short lines were also criticized by the commission.

"It is believed that Mr. Loree has found it impossible to draw up a new plan which would have any reasonable chance of meeting with the approval of the commission.

"On August 15, 1927, some three months after the applications were denied, in behalf of the minority stockholders of St. Louis Southwestern, I filed a memorandum with the Interstate Commerce Commission requesting that the commission, under section 11 of the Clayton Act, compel Kansas City Southern and Missouri-Kansas-Texas to divest themselves of the stockholdings illegally acquired by them in violation of the act. The commission has the matter under advisement."

ST. JOHNSBURY & LAKE CHAMPLAIN.—*Notes Authorized.*—The Interstate Commerce Commission has authorized this company to issue 20 unsecured promissory notes in the aggregate principal amount of $300,000 to evidence a loan of that amount made by the State of Vermont to assist in flood rehabilitation.

TEXAS & PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Texas-New Mexico, which proposed to construct a line to be operated by the T. & P. from a connection with its line near Monahans, Tex., to a point on or near the southern boundary of New Mexico, 31.5 miles, by payment of $35,000 cash for its capital stock.

THORNTON & ALEXANDRIA.—*Abandonment.*—The Interstate Commerce Commission has made public a report by Examiner O. D. Weed recommending that the commission authorize the abandonment of this company's line from Thornton, Ark., to Hampton, about 23 miles, and from Rock Island Junction to Tinsman, about 2 miles.

The New York Life Insurance Company addressed the following telegram to Secretary of State Kellogg protesting against the action of the Chase National Bank:

"Advertisements have recently appeared in the public press under the caption 'The State Bank of the U. S. S. R., Moscow,' whereby there is offered for sale to American investors bonds of the '9 per cent Soviet Railway Loan of 1927,' the payment of principal and interest whereon, it appears from the advertisement, are obligations of the Soviet Government, guaranteed by the Russian State Bank. The advertisement further bears the legend, 'Coupons of this loan may be presented for payment to the Chase National Bank of the City of New York, coupon paying department.'

"We respectfully call your attention to the fact that at the time of the Soviet Revolution in 1917 the New York Life Insurance Company owned and had on deposit, principally with the Russian State Bank, Moscow, over 45,000,000 rubles of bonds of the Russian railways either in the form of Russian Consolidated Railway bonds or bonds of specific railway and representing an investment of upward of $20,000,000. These bonds had been purchased by us pursuant to the governmental regulations with reference to investments by insurance companies doing businesss in Russia. All of these bonds were obligations of or guaranteed by the Russian Government, and in great part they were payable at the option of the holder in dollars and other foreign currencies as well as in rubles. The text of a typical specific railway bond provided: 'The loan is secured by the whole of the property and the entire receipts of the company.'

"After coming into power in Russia, the Soviet regime by decree of January 12, 1918, repudiated the Government obligation on the railway bonds and subsequently caused the specific railways to repudiate the bonds themselves.

"The present offering is thus an attempt by those now in power in Russia to realize on the credit of the Russian railways, while at the same time repudiating the earlier obligations of the same railways.

"We respectfully request that the Department of State should take any action which it appropriately can to prevent the sale by the Soviet regime in the American market, of these Russian railway bonds at a time when the same regime are refusing to recognize the obligation of the Russian State railways previously contracted in favor of American investors."

Dividends Declared

American Railway Express.—$1.50, quarterly, payable March 31 to holders of record March 15.

Illinois Central.—Common, $1.75, quarterly; preferred, $3.00, semi-annually, both payable March 1 to holders of record February 9.

Missouri-Kansas-Texas.—Preferred A, 1¾ per cent, quarterly, payable March 31 to holders of record March 15.

New Orleans, Texas & Mexico.—$1.75, quarterly, payable March 1 to holders of record February 15.

New York, Chicago & St. Louis.—Common, $1.50, quarterly; preferred, $1.50, quarterly, both payable April 2 to holders of record February 15.

Average Price of Stocks and of Bonds

	Feb. 7	Last week	Last year
Average price of 20 representative railway stocks..	115.61	118.73	104.34
Average price of 20 representative railway bonds..	97.12	97.11	93.13

Officers

Executive

F. I. Hardy, assistant to the president of the Boston & Maine, with headquarters at Boston, Mass., has resigned to become president of the Woodbury Granite Company, of Vermont.

L. A. Markham, supervisor of wages of the Virginian, with headquarters at Norfolk, Va., has been appointed assistant to the president, with the same headquarters, and will have special charge of expenses and labor matters.

William H. King, Jr., who has been appointed assistant to the president of the Seaboard Air Line, with headquarters at Norfolk, Va., was born on April 20, 1883, at Portsmouth, Va. He entered railway service in 1900 with the Seaboard Air Line, and served successively as clerk in the accounting department at Portsmouth, Va., clerk in the agency at that place and also served in the

William H. King, Jr.

office of the vice-president nad general manager. In 1910 he became statistician, reporting to the president, and in 1912, became the president's assistant. During 1917 and also during federal control Mr. King served as general manager of the subsidiary lines, and in 1920 became assistant to the operating vice-president. In 1923 Mr. King was appointed assistant to the vice-president in charge of purchases, which position he was holding at the time of his recent appointment as assistant to the president. From 1920 until 1922 he was vice-president in charge of operations of the Baltimore Steam Packet Company.

Financial, Legal and Accounting

Alfred Hermany, assistant general auditor of the Chicago, Rock Island & Pacific, with headquarters at Chicago, retired from active duty on January 1 after more than 42 years of railroad service. Mr. Hermany was born on August

29, 1869, and obtained his schooling at the Philadelphia Polytechnic Institute. He entered railway service in 1885 as a station agent on the Philadelphia & Reading (now the Reading) and later he became a clerk in the office of the auditor of traffic receipts. On May 1, 1888, Mr. Hermany accepted a similar position with the Star Union Line at Philadelphia, Pa., where he remained until May 1, 1892, when he was appointed acting general freight and passenger agent of the Pacific Coast. From May 1, 1892, to July, 1903, he was successively chief clerk and assistant auditor of the Spokane Falls & Northern (now a part of the Great Northern) and auditor and assistant manager of the Pacific & Idaho Northern. Mr. Hermany entered the service of the Rock Island in July, 1903, as a clerk in the accounting department at Chicago. Two years later he was advanced to chief clerk in the general auditor's office and on November 1, 1905, he was promoted to auditor of passenger traffic. In June, 1912, he was promoted to auditor of disbursements, becoming assistant general auditor in February, 1921.

Operative

Worth Rogers, who has been promoted to superintendent of telegraph of the Missouri Pacific, with headquarters at St. Louis, Mo., was born on December 20, 1882, in Kentucky. He entered railway service in August, 1900, on the Chesapeake & Ohio and in May, 1902, he became a telegrapher with the Western Union Telegraph Company. Later he was advanced to wire chief with the Western Union and for several months in 1908 he acted as manager of a telegraph office of the Kansas City Southern. During the same year Mr. Rogers

Worth Rogers

was appointed manager and wire chief of the Missouri Pacific telegraph office at Wichita, Kan., where he remained until August, 1911, when he was advanced to telegraph inspector at St. Louis. In February, 1914, he was promoted to telegraph engineer, being further advanced to telegraph and telephone engineer in December, 1918. Mr. Rogers was promoted to superintendent of telegraph on February 1, succeeding **June C. Browne,** deceased.

Jurisdiction of **W. R. Smith,** general superintendent of the Central district of the Great Northern, with headquarters at Great Falls, Mont., has been extended to include the Western district. **F. S. Elliott,** general superintendent of the of the Virginian with headquarters at Spokane, Wash., has been appointed assistant general manager, with headquarters at Seattle, Wash.

W. A. Gore, general manager of the Virginian, with headquarters at Norfolk, Va., has been granted a year's furlough, because of continued illness, and the position of general manager has been abolished. **George Masten,** superintendent, with headquarters at Princeton, W. Va., has been appointed general superintendent, with the same headquarters in charge of transportation and maintenance of way, reporting to the president.

F. C. Smith, who has been promoted to superintendent of the Ogden Union Railway & Depot Company, with head-

F. C. Smith

quarters at Ogden, Utah, first entered railway service as a telegrapher on the Illinois Central in 1884. His service with the Southern Pacific began in 1886 when he became a telegrapher on the Sacramento division. Later he served as a telegrapher and dispatcher on the Los Angeles, Tucson and Salt Lake divisions until 1899 when he was promoted to chief dispatcher at Ogden. Mr. Smith was promoted to trainmaster at the same point in 1902 and in 1910 he was further advanced to assistant superintendent of the Salt Lake division at Ogden. From November, 1917, to July, 1918, Mr. Smith served with the Russian Railway Service Corps in Siberia as a lieutenant and until April, 1919, he was a captain with the Engineer Corps in France. Mr. Smith occupied the position of assistant superintendent at Ogden until his further promotion to superintendent of the Ogden Union Railway & Depot Company.

Daniel E. Rossiter, who has been promoted to general superintendent of the Western lines of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Butte, Mont., was born on April 21, 1876. After completing a college education he entered railway service in July, 1895, on the Burlington, Cedar Rapids & Northern (now a part of the Chicago, Rock Island & Pacific). He entered the service of the Milwaukee in the following year as a telegraph operator, being advanced to trainmaster at

Daniel E. Rossiter

Chicago in 1912. Later Mr. Rossiter was transferred to Milwaukee, Wis., and to Savanna, Ill., and in 1919 he was promoted to superintendent of the Northern division, with headquarters at Portage, Wis. In 1920 he was transferred to Minneapolis, Minn., and in 1923 he was transferred to the Coast division, with headquarters at Tacoma, Wash., where he was located at the time of his promotion to general superintendent.

Mark C. Williams, who has been promoted to superintendent of the Third division of the Oregon-Washington Railroad & Navigation Company, with headquarters at Spokane, Wash., was born in August, 1882, at Delaware, Ohio. He obtained a civil engineering education at the University of Denver and the University of Colorado from 1903 to 1906 and in October of the latter year he entered the service of the Oregon-Washington as a draftsman. Previous to that time, from 1901 to 1903, Mr. Williams served as a rodman on engineering parties making surveys for construction of the Denver & Salt Lake. During the eight years from 1906 to 1914 he was advanced successively through the positions of draftsman, transitman, locating engineer and resident engineer on the location and construction of the lines of the Oregon-Washington in Washington. On February 1, 1914, Mr. Williams was promoted to division engineer, with headquarters at Walla Walla, Wash., and on June 1, 1917, he was transferred to the First division, with headquarters at Portland, Ore. He left the engineering department on April 1, 1926, to become assistant superintendent of the First division, with headquarters at Portland, where he remained until his further promotion to superintendent of the Third division.

Traffic

V. W. Lewis has been appointed general live stock agent of the Atlantic Coast Line, with headquarters at Florence, S. C., with jurisdiction over Virginia, North Carolina and South Carolina.

Arthur C. Hultgren, assistant general freight agent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, has resigned effective February 15 to become assistant traffic manager of the Roxana Petroleum Corporation, with headquarters at St. Louis, Mo.

John W. Blount, who has been appointed general passenger agent of the Central of Georgia, with headquarters at Savannah, Ga., was born on September 29, 1874, at Rome, Ga. He entered railway service on November 1, 1890, as clerk in the baggage department of the Central of Georgia at Macon, Ga., and until November, 1907, served consecutively as baggage agent, clerk in the station ticket office, passenger agent and city ticket and passenger agent at Ma-

John W. Blount

con, and as traveling passenger agent at Birmingham, Ala., and at Macon, Ga. From November, 1907, until January, 1916, Mr. Blount was district passenger agent for the same road at Macon, and from the latter date until January 1, 1917, he was division passenger agent there. He then became assistant general passenger agent at Savannah, Ga., which position he was holding at the time of his recent appointment as general passenger agent.

Guy T. Pettigrew, division freight agent of the Canadian National, with headquarters at Montreal, Que., has been appointed general freight agent of the Grand Trunk Western lines of the same system, with headquarters at Detroit, Mich. Mr. Pettigrew was born at Sorel, Que., on March 6, 1874, and entered railway service as an apprentice with the traffic department of the Canadian National in Montreal, Que., on May 1, 1888. In 1892 he became a clerk and on October 1, 1895, became chief clerk in the traffic department. In July, 1907, Mr. Pettigrew was appointed division freight agent at Stratford, Ont., and remained there until November, 1911, when he was transferred to Montreal. In July, 1923, he was appointed freight traffic representative of the amalgamated Canadian National Railways at New York, service with the Denver & Rio Grande Western began in 1910 when he was ap-

Guy T. Pettigrew

and in October of same year returned to Montreal as tariff inspector. In 1925 he became division freight agent at Montreal, which position he was holding at the time of his recent appointment as general freight agent.

J. L. Hohl, general agent of the Denver and Rio Grande Western at Chicago, has been appointed assistant traffic manager, with headquarters at the same point, and the position of general agent at Chicago has been abolished. Mr. Hohl was born at Palmyra, Mo. He first entered railway service in the traffic department of the Chicago, Burlington & Quincy at St. Joseph, Mo., in 1890. In 1894 he became connected with the traffic department of the Chicago, Rock Island & Pacific, after which he was appointed agent and yard master of the Mississippi River & Bonne Terre at Flat River, Mo., in 1903. Mr. Hohl's

J. L. Hohl

pointed traveling freight agent at St. Louis, Mo. In 1916 he was promoted to general agent at St. Louis, where he remained until 1921 when he was transferred to Chicago. Mr. Hohl was promoted to assistant traffic manager on February 1. During the World War he served with the Inland Traffic Service at Kansas City, Mo.

E. E. Nelson, assistant passenger traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., has been promoted to passenger traffic manager, with headquarters at the same point, succeeding **Arthur B. Smith,** who retired at his own request on February 1 after completing 44 years of railway service. A sketch of Mr. Nelson's railway career together with his portrait appeared in the *Railway Age* of June 11, 1927, p. 1925, at the time of his promotion to assistant passenger traffic manager. Mr. Smith was born on September 15, 1861, at Boston, Mass., and entered railway service in 1880 as a clerk in the engineers' office of the Burlington & Missouri River (now part of the Chicago, Burlington & Quincy). Later he served on this railroad as division engineer on construction, as chief clerk to the chief engineer, as chief clerk to the general superintendent, as chief clerk to the general passenger

Arthur B. Smith

agent and as assistant general passenger agent. From 1902 to 1904 Mr. Smith was auditor for the Yellowstone Park Company and on May 1 of the latter year he was appointed assistant general passenger agent of the Northern Pacific at St. Paul. In December, 1906, he became general traffic manager of the Consolidated Railway, with headquarters at New Haven, Conn., and in March, 1908, shortly after its merger with the New York, New Haven & Hartford, he was appointed general passenger agent of the latter railroad at the same point. Mr. Smith returned to the Northern Pacific in January, 1922, as passenger traffic manager, with headquarters at St. Paul, a position he occupied continuously until his retirement.

Engineering, Maintenance of Way and Signaling

Elbert H. Dresser, who has been appointed chief engineer of the Duluth, Missabe & Northern, with headquarters at Duluth, Minn., was born on October 9, 1878, at Jefferson, Iowa. He attended

Rensselaer Polytechnic Institute and entered railway service in September, 1899, in the engineering department of the D., M. & N., continuing with that railroad until 1918 and advancing during that time through various positions to that of division engineer. Upon his return from military service during the World War in 1919, Mr. Dresser engaged in general contracting in the Ranger district of Texas and in the following year he became president of the

Elbert H. Dresser

Polaris Concrete Products Company, Duluth, Minn., remaining in the latter position until his appointment as chief engineer the D., M. & N. on January 16.

Purchases and Stores

Ernest S. Newton, storekeeper of the Gulf, Colorado & Santa Fe, with headquarters at Clebourne, Tex., has been promoted to purchasing agent and storekeeper, with headquarters at the same point. Mr. Newton succeeds **Thomas O. Wood,** deceased, who held the title of purchasing agent.

N. V. Oldenbuttel, storekeeper on the Atlantic Coast Line, with headquarters at Waycross, Ga., has been appointed assistant general storekeeper, with the same headquarters, and with jourisdiction over the Second and Third divisions. **J. C. McLendon,** storekeeper at Southover, Ga., has been transferred in the same capacity to Waycross, succeeding Mr. Oldenbuttel. **J. J. Goins,** assistant storekeeper at Montgomery, Ala., has been appointed storekeeper at Southover, Ga., succeeding Mr. McLendon.

Obituary

E. Cliff Coheh, district passenger agent of the Atlantic Coast Line, died at Pittsburgh, Pa., on January 13.

James Needham, superintendent of the St. Paul Coal Company, the Republic Coal Company and other coal properties of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, died on January 31 at Maquoketa, Iowa, at the age of 56 years.

Kirby Smith Hull, superintendent of the Southern division of the Gulf, Colorado & Santa Fe, who was shot by a discharged conductor and died at Temple, Tex., on January 30, was born on November 14, 1869, at Monterey, Va. He entered railway service at the age of 17 years as a section and bridge building laborer on the Gulf, Colorado & Santa Fe. Mr. Hull was advanced successively to foreman of bridges and buildings, general foreman and road master, and in April, 1906, he was promoted to superintendent of the Southern division, with headquarters at Temple. During federal control of the railways Mr. Hull served as general superintendent of the G., C. & S. F., and from March 1919, until the date of his death, he was superintendent of the same railroad.

Isaac G. Ogden, vice-president in charge of finance of the Canadian Pacific, with headquarters at Montreal, Que., died at his home there on February 4. Mr. Ogden, who was 84 years of age, was born in New York, and the last 45 years of his life had been spent in the service of the Canadian Pacific. After leaving school at the age of 16, he became a clerk in a New York mercantile house, and later entered the banking firm of Fisk & Hatch. He later entered the service of the Canadian Pacific as auditor of the Western division, with headquarters at Winnipeg, Man., and was subsequently transferred to Mon-

Isaac G. Ogden

treal, Que. In 1887 he became comptroller, and in 1901, vice-president and placed in charge of finance, which position he was holding at the time of his death.

Edward Roberts Murphy, retired general auditor of the Denver & Rio Grande, who died on January 28, at Denver, Colo., was born on December 20, 1843, at Philadelphia, Pa. During the Civil War Mr. Murphy served with the One Hundred and Twenty-first Pennsylvania Volunteer infantry until he was wounded and honorably discharged. He attended the University of Pennsylvania for a short period and in 1867 entered railway service as a tonnage clerk on the Pennsylvania at Philadelphia, He served in that capacity until 1875 when he was advanced to chief clerk to the comptroller. In November, 1880, Mr. Murphy was appointed auditor of the Texas & Pacific and in the following year he became auditor of the Denver & Rio Grande. He remained in the position of auditor, with headquarters at Denver, until July 1, 1903, when he was promoted to general auditor, a position he held until his retirement from active service in 1917 after 36 years as auditor and general auditor of the D. & R. G.

Charles Frederick Wilson Felt, chief engineer of the Atchison, Topeka & Santa Fe System for the past 14 years, with headquarters at Chicago, died on

C. F. W. Felt

February 4 at Colorado Springs, Colo., from complications following an extended illness which caused him to take a leave of absence in November, 1927. Mr. Felt had long been closely connected with the work of the American Railway Engineering Association, of which he was a charter member, serving as its president in 1926-1927 and for six years as a director and as a vice-president. He was born on April 29, 1864, at Salem, Mass., and was graduated from the Massachusetts Agricultural College in 1886. In the same year he entered railway service as an axman on the construction of the Santa Fe in Kansas and Colorado. Later, Mr. Felt was advanced to rodman and then to bridge engineer. In 1888 he became a levelman on the Denver & Rio Grande. For the next five years he served successively as instrument man on the Arizona & Southeastern (now a part of the Southern Pacific), as transitman on the Topolobampo Line in Mexico, as resident engineer on the Northern division of the Gulf, Colorado & Santa Fe at Cleburne, Tex., and as office engineer of the Rio Grande Southern. In February, 1893, Mr. Felt returned to the G., C. & S. F. as a division engineer and in the same year he was appointed resident engineer, with headquarters at Galveston, Tex., being promoted to chief engineer in September, 1896. Thirteen years later, on November 6, 1909, he was promoted to chief engineer of the Eastern and Western lines of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan. Mr. Felt became chief engineer of the Santa Fe system on April 1, 1913.